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Volume 4:
Strategies for the Prevention of Youth Suicide

Report of the Secretary's Task Force on Youth Suicide

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Alcohol, Drug Abuse, and Mental Health Administration

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Strategies for
the Prevention of
Youth Suicide

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Edited by:
Mark L. Rosenberg,
M.D., M.P.P.
Katie Baer

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MEMBERS OF THE SECRETARY'S TASK FORCE ON YOUTH SUICIDE

Shervert Frazier, M.D.
Chairman
Formerly, Director
National Institute of Mental Health

Carolyn Doppelt Gray
Acting Deputy Assistant Secretary
Office of Human Development Services

M. Gene Handelsman
(served until June 1986)
Formerly, Deputy Assistant Secretary
Office of Human Development Services

Robert B. Helms, Ph.D.
Acting Assistant Secretary for Planning and Evaluation
Office of the Secretary

Jerome H. Jaffe, M.D.
(served until June 1986)
Director, Addiction Research Center
National Institute on Drug Abuse

Stephanie Lee-Miller
Assistant Secretary for Public Affairs
Office of the Secretary

Markku Linnoila, M.D.
Clinical Director, Division of Intramural Clinical and Biological Research
National Institute on Alcohol Abuse and Alcoholism

Dodie T. Livingston
Commissioner, Administration for Children, Youth, and Families
Office of Human Development Services

Robert G. Niven, M.D.
(served until January 1986)
Formerly, Director, National Institute on Alcohol Abuse and Alcoholism

Everett R. Rhoades, M.D.
Director, Indian Health Service
Health Resources and Services Administration

Mark L. Rosenberg, M.D., M.P.P.
Assistant Director for Science
Division of Injury Epidemiology and Control
Center for Environmental Health and Injury Control
Centers for Disease Control

Charles R. Schuster, Ph.D.
Director
National Institute on Drug Abuse

Robert L. Trachtenberg
Deputy Administrator
Alcohol, Drug Abuse, and Mental Health Administration

STAFF

Eugenia P. Broumas, Coordinator, Task Force Activities
Special Assistant to the Deputy Director
National Institute of Mental Health

Heather A. Pack, Policy Coordinator
Executive Secretariat
Office of the Secretary

ALTERNATES

Dorynne Czechowicz, M.D.
Assistant Director for Medical and Professional Affairs
Office of Science
National Institute on Drug Abuse

Jack Durell, M.D. (served until July 1986)
Formerly, Associate Director for Science
National Institute on Drug Abuse

Paget Wilson Hinch
Associate Commissioner, Family and Youth Services Bureau
Administration for Children, Youth, and Families
Office of Human Development Services

Chuck Kline
Deputy Assistant Secretary for Public Affairs - News
Office of the Secretary

Arnold R. Tompkins
Deputy Assistant Secretary for Social Services Policy
Office of the Assistant Secretary for Planning
and Evaluation
Office of the Secretary

WORK GROUP ON STRATEGIES FOR THE FUTURE

Mark L. Rosenberg, M.D., M.P.P., Chairperson
Assistant Director for Science, Division
of Injury Epidemiology and Control
Center for Environmental Health and Injury Control
Centers for Disease Control

Donald M. Berwick, M.D.
Vice President, Quality of Care Measurement Department
Harvard Community Health Plan
Boston, Massachusetts

Lucy Davidson, M.D.
Medical Epidemiologist, Division of Injury
Epidemiology and Control
Center for Environmental Health and Injury Control
Centers for Disease Control

Jerome A. Motto, M.D.
Professor of Psychiatry, University of California
School of Medicine at San Francisco
San Francisco, California

David Shaffer, M.B., B.S., F.R.C.P.
Director, Division of Child Psychiatry
New York State Psychiatric Institute
Professor of Psychiatry and Pediatrics
College of Physicians and Surgeons of Columbia University
New York, New York

Morton M. Silverman, M.D.
Formerly, Associate Administrator for Prevention
Alcohol, Drug Abuse, and Mental Health Administration

Jack C. Smith, M.S.
Senior Statistical Consultant
Division of Reproductive Health
Center for Health Promotion and Education
Centers for Disease Control

Jay A. Winston, Ph.D.
Director, Center for Health Communication
Harvard School of Public Health
Boston, Massachusetts

Guest Participants

Emily H. Mumford, Ph.D.
Professor of Clinical Sociomedical Sciences
College of Physicians and Surgeons of Columbia University
Chief, Division of Mental Health Utilization and Policy Research
New York State Psychiatric Institute
New York, New York

Jerry Silverman
Formerly, Policy Analyst, Office of the Assistant Secretary
for Planning and Evaluation
Office of the Secretary

Discussion Panel - National Conference on Strategies for the Prevention of Youth Suicide

Alfred B. Del Bello
Chairperson
National Committee on Youth Suicide Prevention
New York, New York

Cynthia R. Pfeffer, M.D.
Chief, Child Psychiatry Inpatient Unit
New York Hospital, Westchester Division
Associate Professor of Clinical Psychiatry
Cornell University Medical College
White Plains, New York

Charlotte P. Ross
President and Executive Director
Youth Suicide National Center
Washington, D.C.

James O. Mason, M.D., Dr.P.H.
Director
Centers for Disease Control
Atlanta, Georgia

Shervert H. Frazier, M.D.
Formerly, Director
National Institute of Mental Health
Rockville, Maryland

NATIONAL CONFERENCE ON STRATEGIES FOR THE PREVENTION OF YOUTH SUICIDE

INTRODUCTION

Background

During the past 30 years, the suicide rate for young people between the ages of 15 and 24 almost tripled. Suicide is now the second leading cause of death for young people in this age group. This sharp increase in youth suicide rates prompted the Secretary of Health and Human Services to organize a task force to investigate this pressing problem.

The major functions of the task force were to review, assess, and consolidate the available information about suicide; provide forums for communication among health care professionals, educators, researchers, social service workers, and families; and coordinate suicide activities among Federal agencies, Congress, State and local governments, private agencies, and professional organizations.

The task force was also charged with recommending activities to address the problem. The task force apportioned these various tasks to three work groups, one on risk factors, another on preventive interventions, and a third on strategies and recommendations. This volume summarizes the work of the Work Group on Strategies for the Future charged with evaluating strategies and developing recommendations. The recommendations in their entirety are contained in Volume 1 of the task force report.

Objectives and Goals

The Work Group on Strategies for the Future had four objectives. The first objective was to identify the most cost-effective strategy for preventing youth suicide. We had hoped to do this by reviewing the findings of the work groups on risk factors and prevention, matching specific preventive interventions to subpopulations with specific risk factors, and then evaluating these strategies in terms of cost and effectiveness.

The second objective was to present a comprehensive set of recommendations to the Secretary of Health and Human Services that would address the most urgent needs for research and prevention; reflect input from a diverse set of disciplines, interest groups, and experts in the field; be clear, practical, and few in number; address ways to include many different sectors (such as business, education, health, and mental health); and not require a large expenditure of government funds.

The third objective was to develop an implementation plan to indicate how a wide range of sectors and organizations could all be active participants in implementing the recommendations. These sectors included public health, mental health, health services, education, business and philanthropy, media and entertainment, criminal justice and legal, religion, social services, and family; the organizations included government and non-government groups.

Finally, the fourth objective was to build a consensus in the suicide prevention communities by using the process of developing the recommendations to bring together separate sources of support: the suicide prevention center movement and the "medical community"; lay persons and health professionals; service providers and the research community; and even within the research community, to bring together the biological and psychosocial "camps."

Procedures and Process

The work group constructed preliminary recommendations by reviewing all 50 papers commissioned by the task force, including the papers on risk factors and on prevention. In addition, recommendations were solicited from all participants at the national conferences on risk factors and prevention. Over 700 experts and participants in youth suicide prevention attended these conferences, and more than 200 persons submitted written recommendations. From these sources, the work group compiled a set of preliminary recommendations that the task force reviewed and revised. These preliminary recommendations were distributed just before the National Conference on Strategies for the Prevention of Youth Suicide. At a day-long invitational meeting, working groups composed of experts in specific areas of suicide prevention worked together with representatives of more than 90 different local and national organizations that could play important roles in implementing these recommendations. Each working group was asked to establish priorities for the recommendations in their sector, list the steps essential to implementing each recommendation, identify who should do each step, and present a rough timetable and set of measurable objectives for monitoring progress on each objective. The collected set of recommendations and the implementation plan for each objective, a 120-page document, were typed, edited, printed, and distributed for discussion by the next day at the National Conference on Strategies for the Prevention of Youth Suicide. These recommendations were further refined, and the 47 recommendations from the conference were reduced to 6 final recommendations for the task force.

Summary of Commissioned Papers

This work group commissioned 11 papers to assist in the development of strategies and recommendations. To help the task force avoid mistakes that had been made before, Margaret Gerteis, a health services historian, and her coauthor, Mark L. Rosenberg, asked what we can learn from how the Federal Government approached the problem in the past--what seemed to have worked and what did not; what the keys were to the Government's successes. They looked at the major players (individuals and institutions) on the scene; their positions; and their institutional constraints, strengths, and weaknesses. They examined how this information could be incorporated into the task force recommendations from the outset so that the final recommendations would have the greatest possible chance of facilitating suicide prevention.

In "The Federal Role in Youth Suicide Research and Programs: The Legacy of Recent History," Gerteis and Rosenberg traced the history of Federal involvement in the area of suicide from the 1960s, when a special suicide prevention unit was established at the National Institute of Mental Health (NIMH), through the era when that unit was dismantled and suicide research was subsumed under NIMH's interest in depression. At that point NIMH no longer provided a distinct focal point for leadership in suicide prevention, and, in response, locally based suicide prevention centers assumed a leadership role.

The authors pointed to two negative consequences of this development: (1) divisions and distrust between local community groups and academic researchers and (2) a fragmented research community in a field that desperately needs coordination and collaboration. As a result, support for youth suicide research is weaker than it might be because there is no unified advocacy for it. The authors recommend both a vigorous, integrated program of planned suicide research with sustained funding through NIMH's new suicide research consortium and strong support for the national leadership provided by the Centers for Disease Control (CDC) in surveillance and prevention activities.

A major paper, prepared by David M. Eddy, Robert L. Wolpert, and Mark L. Rosenberg, focused on "Estimating the Effectiveness of Interventions to Prevent Youth Suicide." The authors constructed a model and conducted a survey of experts to estimate the effectiveness of six different interventions to prevent youth suicide: (1) affective education, (2) early identification and treatment of at-risk youth, (3) school-based screening programs, (4) crisis centers and hot lines, (5) improved training of health care professionals to treat at-risk youth, and (6) restriction of access to major means of committing suicide. The authors found a wide range of uncertainty among the experts as to the relative efficacy of the interventions but a consensus that no single intervention was "the" cure. The authors recommended a five-step strategy of (1) analyzing current information about the effectiveness of specific interventions, (2) conducting short-term research to estimate effectiveness and costs of those interventions for which data are not available, (3) analyzing the results of that cost/effectiveness research, (4) designing pilot programs to evaluate the most promising research programs, and (5) planning large-scale interventions based on evaluation of the pilot projects.

The human cost of youth suicides is well known; what is less well appreciated is the economic cost in terms of lost productivity. In assessing the "Economic Impact of Youth Suicides," Milton Weinstein and Pedro Saturno found that each youth suicide in the United States results in an average loss of 53 years of life and $432,000 of economic productivity. The total cost of youth suicide to the Nation in 1980 was 276,000 years of potential life lost and $2.26 billion in lost productivity. If the trend continues to the year 2000, the annual costs will be 276,000 to 346,000 years of potential life lost and from $2.26 billion to $2.65 billion, even with a shrinking population base in the 15- to 24-year range. Relative to its social and economic impact, the authors pointed out, youth suicide receives a disproportionately small share of public health resources for research and programs.

Professionals who see and help troubled young people say uniformly that they need an accurate way to identify those adolescents who are suicide-prone and determine how serious their predisposition to suicide is. Many professionals rely on clinical judgment and their "feel" for the person; a more formalized screening instrument would improve their effectiveness in identifying young people at risk and referring them to appropriate treatment. In "Developing a Youth Suicide Screening Instrument," Robert Yufit reviews the need for such a screening technique and describes a Suicide Screening Checklist that could be field-tested to determine its effectiveness.

What factors do young suicide attempters have in common? A study of teenagers who attended free medical clinics in 10 cities showed that the factors most strongly associated with suicide attempts included multiple depressive symptoms, living apart from parents (often after running away from home), having a history of conduct problems, having family members who are psychiatrically ill, repeated drunkenness, use of drugs other than marijuana, and having been assaulted, arrested, or incarcerated. Lee Robins, who described the study in "Suicide Attempts in Teenage Medical Patients," developed a guide incorporating these correlates to help clinic personnel recognize youngsters at risk of suicide attempts.

In "Suicidal Ideation and Attempts: The Epidemiologic Catchment Area Study," Eve Mościcki, Patrick O'Carroll, and coworkers reported that more than 21 percent of adults aged 18 and older said there had been a period of 2 weeks or more at some time during their lives when they thought about their own (or another's) death. Moreover, 7.1 percent reported that they had "felt so low" they had wanted to die, 10.2 percent had thought about committing suicide, and 2.9 percent had attempted suicide at some time in their lives. Females 25 to 44 years of age, separated or divorced persons, whites, and persons with low socioeconomic status were more likely to have attempted suicide or to have thought about it, as were persons with a diagnosis of psychiatric disorder.

Because the news media see their role as defender of the public's right to know, rather than as a vehicle for social change, they have not attempted to focus efforts on the prevention of youth suicide. Critics and scholars who study the media's impact on the phenomenon have emphasized the negative effect that true or fictional stories about suicide may have by causing young people to imitate the suicides to which they are exposed through these stories. The result has been a generally defensive and adversarial relationship between the media and social sciences, according to Alan Berman, author of "Interventions in the Media and Entertainment Sectors to Prevent Suicide." He recommended that the two communities work collaboratively to prevent youth suicide by conducting research into the mechanisms by which the media affect imitative behavior, increasing awareness of the issue among media decisionmakers, and encouraging the media to present models for positive change.

Barbara Starfield reviewed "Preventive Interventions in the Health and Health-Related Sectors with Potential Relevance for Youth Suicide" and noted that the health services sector has the greatest potential for impact on youth suicide. To realize the potential of that sector, though, it will be necessary to improve the following: access to services, consistent utilization of a regular source of primary health care, recognition of psychosocial problems, and management of such problems when they are detected. Further, Starfield stated, interventions are most likely to be successful if they do not require individuals to change their behavior; hence, "passive" interventions (such as reducing access to the means of suicide) are more likely to be successful.

The increase in youth suicide has broadly paralleled other striking increases in "youth disorders" such as homicide, out-of-wedlock births, and drug and alcohol use, according to Edward A. Wynne. In "Preventing Youth Suicide through Education," he used an analysis based on sociologist Emile Durkheim's work to suggest that the problem lies in society's failure to provide an integrated, wholesome environment for young people in the schools.

"The Contribution of Social Services to Preventing Youth Suicide" can be substantial, according to Jerry Silverman. That sector's useful perspectives include focusing on populations at risk, targeting services to those most in need, coordinating services for diverse problems, focusing on the family, and networking among various service providers. The Department of Health and Human Services (DHHS) can utilize these perspectives in working toward the goal of preventing youth suicide. Among the strategies Silverman recommended were encouraging cooperative efforts among social service disciplines, disseminating information about successful approaches, working with local social services groups, and encouraging relevant research in the field.

The world of business and charitable foundations has not viewed support for youth suicide as an important priority. Where resources from these sectors have been channeled to youth suicide programs, the motivation often has been the personal interest of a specific senior official in the organization, pointed out coauthors Wendy Watson and Bobbie Wunsch in "Interventions through Business and Industry to Prevent Youth Suicide." The authors recommended that businesses encourage community education and school-based research in the area of youth suicide, as well as include counseling, through their employee assistance programs, for employees' families with children at high risk of suicide.

NATIONAL CONFERENCE ON STRATEGIES FOR THE PREVENTION OF YOUTH SUICIDE

Summary of Opening Remarks

Otis R. Bowen, M.D., Secretary of Health and Human Services, reviewed some of the risk factors associated with the rise in youth suicide since the 1960s. He cited alcohol and drug abuse, divorce and family disruption, child neglect and abuse, depression, violence, and antisocial behavior. The sharpest rise in youth suicides, which occurred between 1965 and 1979, he noted, was coincident with a sharp increase in drug use among young people. Dr. Bowen advocated a multifaceted approach to controlling the risk factors associated with suicide among the young.

A theme common to youth suicides and other youths in trouble is alienation and loss of hope. Dr. Bowen strongly emphasized the potential role of the family and community in helping to alleviate many problems of youth, including suicide. By giving emotional and spiritual support, parents and siblings, peers, friends, teachers, and church and community leaders can participate in helping youth through their developing years. The family structure must be strengthened because it is the most important source of nurture and guidance for young people and "the single best social program we have." Although a strong family cannot guarantee a young person a future without pain, a life with no family support becomes very hard to live.

As Secretary of Health and Human Services, Dr. Bowen stated that his important goals included strengthening the family, promoting health and healthy behavior in the home, and ensuring that the Department's programs promote, rather than impede, the creation and maintenance of strong families. To this end, DHHS and the Department of Labor have established YOUTH 2000, a new program to help young people shape a responsible future. The program's goals are to encourage "responsible family formation, lifestyles free from substance abuse, better education, employment and economic self-sufficiency, and physical and mental well being."

Two specific goals of YOUTH 2000 are to reduce substantially the mortality rate among 15- to 19-year-olds and reduce the number of suicides. In addition, YOUTH 2000 will seek to reduce teen pregnancies.

As part of the campaign, young people will be encouraged to set positive goals for themselves with the help of families, health professionals, State and local officials, community leaders, and other concerned citizens. Dr. Bowen stated that he is optimistic about this program's success because of the reemergence of the community in the role of extended family (e.g., schools, religious organizations, service clubs) and because parents and others in the community have initiated campaigns to decrease the negative effects of alcohol and drug abuse in many areas of our lives.

He closed by challenging participants to help find better ways to guide families and communities to respond better to signs of desperation or suicidal behavior in young people.

Shervert H. Frazier, M.D., the task force chairman, traced the history of NIMH from its original emphasis as a service and training institution to its current research mission in mental health. As an organization devoted to basic, clinical, and applied research, NIMH links the research world to real-world service needs and facilitates the application of research findings to clinical practice.

The long term NIMH agenda proposed for youth suicide focuses on clinical as well as basic research needs. Clinical research studies are needed for youth with histories of mental disorders. Although we know that diagnosable mental illness accounts for only a portion of youth suicides, we also know that the risk of suicide is high among mentally ill young people. Followup studies of schizophrenic and depressed adolescents are needed to better understand the course of these illnesses and to find better ways of identifying individuals at high risk. Biochemical aspects of suicidal behavior need more study. A related need is to assess and improve instruments that measure aggressive and impulsive behavior and then to clarify suggested associations between these traits and biological findings. This will also help to identify individuals prone to self-destructive behaviors other than suicide.

Aside from specific psychiatric disorders, research on psychological autopsies should be expanded. Followup studies on suicide attempters should be conducted, including studying the course and outcome of treatment for suicide attempters and ideators. Longitudinal studies are needed of populations that can be followed over sufficient time. Suicide should be considered prospectively in context with many other risky behaviors of adolescence, such as car accidents, homicide, substance abuse, smoking, and aggressive behavior. How these activities and behaviors relate to each other should be explored. Finally, an immediate need is to redefine the methodologies available for both clinical and epidemiological studies of suicides.

Many needs exist in the systems-oriented perspective, NIMH's biometry and applied sciences programs. We need to study the effectiveness of individual primary care practitioners, pediatricians, mental health professionals, educators, and school personnel in identifying children at potential risk and taking action. We also need to study the effectiveness of various parts of the mental health and health care systems and how well they interact with each other. For example, how well do various health, human service, and educational components work together in a given region? How effectively do emergency care providers interact with the family physician? How effective is the referral and followup between the schools and the mental health system?

Dr. Frazier suggested that a study be tagged onto the National Mental Health Statistical Reporting system to learn how standard practices across the country compare with model intervention programs. He concluded by emphasizing that NIMH's most appropriate and productive roles are to assist in basic and clinical research, design and evaluate major demonstration programs funded by non-Federal as well as Federal resources, and collaborate with service providers and those who educate practitioners and clinicians.

James O. Mason, M.D., Dr.P.H., Director, Centers for Disease Control, addressed the role of the Federal Government in preventing youth suicide. He stated that the Federal role should be one of leadership and should include all three branches of government. Given the magnitude of the youth suicide problem and the social consequences resulting from premature, preventable deaths, we need strong Federal leadership to ensure that youth suicide is recognized as an important national problem that must be addressed effectively at the national, State, and community levels.

The kind of leadership the government can best provide includes:

- Coordinating suicide prevention efforts among all levels of government, the private sector, and other concerned voluntary groups. In this way, successful programs can be shared efficiently with others. This function should in no way obviate the many initiatives undertaken in communities around the country.
- Mobilizing resources. Research capacity as well as funds need to be developed to support research at the basic and applied levels.
- Translating the results of research into practical applications as rapidly as possible.
- Collecting statistical data and setting up surveillance systems. Improved data col-

lection efforts are needed to identify and report suicides more uniformly, completely, and objectively. CDC has compiled surveillance data on suicide among youth, but these data are likely to be inaccurate because of the widespread underreporting of suicide deaths. Criteria have been defined for determining which deaths can be called suicides, but distinguishing unintentional deaths from suicides is still a problem.

- Establishing goals and measurable objectives to track progress in suicide prevention. These must be based on sound data and effective interventions.

The CDC's primary role in the area of youth suicide is one of prevention. Many interventions have yet to be fully developed and evaluated. Dr. Mason concluded by stating that "we have only started our war against this tragic problem in our society."

Reports of Workshops

An important objective of the Work Group on Strategies for the Future was to go beyond the traditional "medical model"--to involve in the prevention of youth suicide disciplines and interest groups outside the health care, mental health, and public health sectors. For the National Conference on Strategies for the Prevention of Youth Suicide, we divided over 75 recommendations among 10 groups organized by sectors. For each sector, representatives of the organizations important in implementing these recommendations were invited to participate in developing implementation plans. About 100 invited participants, representing public health, mental health, health services, education, philanthropy, business, criminal justice and the law, media and entertainment, social services, youth services, and the family, met in workshops the day before the conference. Each workshop addressed recommendations pertinent to a particular sector. The workshop participants considered a formidable number of recommendations derived from commissioned papers, or submitted by participants at the previous conferences on risk factors and prevention, members of the various work groups (subgroups of the overall task force), and interested individuals. Participants then had the task of synthesizing, placing in priority order, and developing implementation plans for the recommendations. The results of their work were presented in a printed report distributed to the conference attendees the following day. This summarizes those reports.

Public Health

Chairman: Morton M. Silverman, M.D., formerly, Associate Administrator for Prevention; Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA)

Prevention of youth suicide should be a public health goal and priority. Public health has important roles to play in surveillance, research, program evaluation, and program delivery.

Specific recommendations center on the need for improved surveillance--identifying, tracking, reporting, and analyzing cases--in three areas: suicide, suicide clusters, and attempted suicides. Operational definitions for each of these terms are needed, together with criteria for the determination of suicide as a cause of death on death certificates.

State and local public health authorities should work with appropriate public and private groups in community-level epidemiological investigations and preventive interventions. This approach will build teams of professionals, at the community and State level, with expertise in recognizing and preventing youth suicide.

Public health sector teams like these should also be involved in research on the etiology of suicidal behavior, supporting and organizing longitudinal and prospective studies of high-risk youth. Research priority should be given to populations with special needs, such as Native Americans, and to populations who are already part of a major research endeavor, such as the NIMH Depression Collaborative Study.

Mental Health

Chairman: David Shaffer, M.B., B.S., F.R.C.P., Director, Division of Child Psychiatry, New York State Psychiatric Institute, and Professor of Psychiatry and Pediatrics, College of Physicians and Surgeons, Columbia University

The underlying assumption of this workshop is that a majority of young people who commit suicide have some evidence of mental illness. Still, the relationship between the individual's mental illness and suicide may be quite complex. For example, the precipitants or "trigger points" for suicide are often unrelated to the distortions or fantasies commonly associated with mental illness. Another important assumption is that modern research techniques have barely touched some of the most basic--and probably relatively easy-to-answer--questions in this area. Thus, there is great optimism about the potential for research to discover risk factors for youth suicide and optimal forms of treatment.

In the overall area of improved research design, three specific strategies were recommended. One is to "piggyback" youth suicide questions onto existing research, such as epidemiologic studies and research on substance abuse, by including questions about youth suicide in related questionnaires or interviews. Second, because there is always more than one factor contributing to a young person's suicide, more research needs to be done on multiple risk factors that characterize young people who commit or attempt suicide. And third, research should concentrate on groups of young people at particularly high risk, including runaway children, young homosexuals, and Native Americans.

Once young people at risk are identified, the challenge is to provide the most effective preventive intervention; here, the problem is complicated by the lack of evidence for the effectiveness of different treatments. Theories abound and are passionately defended, but very little evidence has been accumulated to provide direct guidance on the best treatment. To help provide a clearer picture of the children at risk and in need of treatment, it is important to have registers (i.e., listings of cases, treatment, and outcome) at places where large numbers of suicide attempters are seen to permit followup on the efficacy of treatment.

Finally, there should be greater incentives to encourage people to undertake professional mental health training and focus on this problem of child and adolescent suicide. Professionals already in the field also need training to improve their skills at identifying and managing young persons at risk.

Health Services

Chairperson: Emily H. Mumford, Ph.D., Professor of Clinical Sociomedical Sciences, College of Physicians and Surgeons of Columbia University)

We must try organizing health services for a variety of approaches to suicide prevention because information is lacking to support one definitive approach. Demonstration programs for young people at high risk of suicide should be located in a variety of settings where such young people are likely to come for help: emergency rooms, substance-abuse treatment centers, runaway shelters, community and migrant health centers, and other similar places where adolescents seek health services. These demonstration programs should have an evaluation component built in to address feasibility, efficacy, and cost-effectiveness. There should also be more integration of services among the several agencies or institutions that are likely to come into contact with a youth at risk for suicide.

In the area of research, adolescent suicide should be viewed as but one aspect of an array of suicide-related behaviors. Because suicide is a relatively rare event, it is difficult to use it as the sole outcome indicator of the impact of preventive interventions. Research, therefore, should focus on indicators of suicide risk that are more prevalent and amendable to change. Such indicators include lessening of depression, fewer admissions for drug overdose, fewer runaways, and less ruminating about suicide.

Education

Chairperson: Lucy E. Davidson, M.D., Ed.S., Medical Epidemiologist, Division of Injury Epidemiology and Control, Centers for Disease Control

School personnel represent the most universal access we have to adolescents. With the opportunity to observe young people in a variety of daily activities, such school personnel--including teachers, nurses, counselors, social workers, administrators, and other school service workers--have the potential to reach troubled youth before their distress escalates to suicide. Youth suicide prevention programs in the education sector should capitalize on the existing relationships school personnel already have with students and their families, rather than attempt to push students and staff alike into unfamiliar areas of psychiatric diagnosis and treatment. School personnel should be trained, through their initial professional and continuing education, to recognize youth at risk for suicide, to approach these students and their families, and to refer them to available services. School-based suicide prevention programs also need to be designed, evaluated, and, when effective, promulgated.

Local and Federal collaboration is important in achieving these objectives. Education about important health issues also needs to occur outside the schools. At the national level, information should be collected about the spectrum of school-based programs available. Another national task is to derive content and process objectives for school-based suicide prevention, then design and field-test several promising model programs. Information based on evaluation of those programs then could be disseminated to the local level, where school systems should decide how to adapt the materials and techniques to their community's needs and resources.

Specific recommendations from the workshop were:

- Develop model curricula on suicide prevention.
- Develop information to help school personnel recognize high-risk behaviors among young people.
- Establish a referral network in the community and make it known to school system personnel.
- Disseminate information through the schools so that troubled youth can contact appropriate agencies about a range of issues that include not only suicide, but also unintended pregnancy, drug problems, and family conflicts.
- Help train "gatekeepers" who have frequent and close access to students (coaches, scout leaders, etc.) to recognize young people at risk for suicide.
- Establish a national clearinghouse that would disseminate information about youth suicide and suicide prevention.

Religion and Youth Activities

Cochairmen: Dominic Mastrapasqua, Deputy Associate Commissioner, Family and Youth Services Bureau, Administration for Children, Youth and Family; David A. Brent, M.D., Codirector, Teenage Suicide Center, University of Pittsburgh

Members of the clergy can have a valuable role in preventing youth suicide: they play a gatekeeper role at pivotal times in peoples' lives, and because they are generally respected and widely accepted in their community, many people prefer to consult them in lieu of mental health professionals. Because their services are not often well-integrated with social services in the community, however, and because their training in this area is minimal, their help may be overlooked.

The clergy's effectiveness in the area of youth suicide prevention can be eroded if religious views exclude certain youth at risk, such as homosexual adolescents, or devalue mental health treatment, using the rationalization that strong religious faith alone can overcome all problems. Further, the problem of privileged communication can cloud the issue of a "clergyperson's" responsibility in a case where a youth discloses that he or she is suicidal.

Within the framework of these concerns, the workshop participants made several recommendations. First, all denominations should develop guidelines to help clergy identify and assist adolescents at risk. They should also develop standards for training and certification of those engaged in this area of pastoral counseling. Guidelines should also be developed for the area of privileged communications, with particular attention to exchanging information about clients held in common by clergy and mental health professionals. Finally, churches and synagogues should be encouraged to increase youth activities that could provide support to those in potential need, including efforts to involve disenfranchised youth in activities traditionally offered by religious organizations.

In the area of youth services specifically, this workshop recommended an extension and expansion of programs such as Head Start, programs that reach disadvantaged youth and integrate social, medical, and mental health services. Youth services also can encourage and support appropriate peer support groups among youth at risk; however, "peer counseling" may be too heavy a burden to place on some adolescents.

Legal/Political and Criminal/Juvenile Justice

Chairman: Robert E. Litman, M.D., Codirector and Chief Psychiatrist, Los Angeles Suicide Prevention Center

The highest priority articulated by this workshop was to recommend every possible legal action to limit access for disturbed young persons to lethal means of suicide, especially handguns.

Specifically, the workshop urged the following steps:

- Enforce the current laws on licensing requirements and limiting access to minors.
- Improve safety features on guns.
- Encourage insurers to exclude a clause relating to self-inflicted injury.
- Survey existing programs on suicide prevention in detention centers and prisons to determine if model programs need to be developed for such settings.

Family/Social Services

Chairman: Jerry Silverman, Program Analyst, Office of the Assistant Secretary for Policy and Evaluation

Underlying this workshop's discussion were two general themes related to the perspective of people who work in family and social services. One is that such services have a tradition of working with communities and linking various resources within a community; such an approach obviously has relevance to the issue of youth suicide prevention. The other theme is that family and social services are less likely to use the medical model of suicide, that is, of suicide as a problem that can be "cured." Rather, the family and social services sector is more likely to view suicide as one aspect of a series of life challenges.

The workshop's general recommendation was to encourage communities to mobilize around issues of troubled youth and to lobby for State funds through sources such as block grants. A recommendation that stresses primary prevention is to develop and disseminate models of family support to help families deal with a whole range of problems. A third general recommendation was for training people in the fields of social and family services to help them be more effective "gatekeepers" as they encounter troubled youth with suicide potential.

Business and Philanthropy

Chairman: Richard M. Steinhilber, M.D., Chairman, Cleveland Clinic Foundation

This workshop acknowledged that the business and philanthropic community, in general, does not get involved in issues relating to youth suicide, except in those unusual cases where a company executive has had a family member in such a crisis. In those cases, executives have used their positions to influence donation of funds to the area of youth suicide. The corporate community tends to use denial as "a convenient mechanism" to avoid involvement in a whole range of personal and social issues. Because the workplace is an area where adults, and many adolescents, spend a significant amount of time, however, workshop participants thought it an appropriate arena for prevention efforts.

The first recommendation was to help educate employee assistance counselors about ways to identify risk factors for youth suicide; dissemination of materials from this conference would be a good starting place. Smaller businesses without employee assistance programs should be given help in identifying community resources to deal with troubled youth. Companies can stress such resources and encourage prevention efforts during orientation programs for new employees, especially companies like fast food chains that employ large numbers of young people.

Finally, participants agreed that it is strategically important to raise the awareness of leaders in the corporate world, especially in the Fortune 500 sphere, about the complexities of youth problems, including suicide. Solid data relating to these problems must also be provided to philanthropic organizations.

Media

Chairman: Alan Berman, Ph.D., Professor of Psychology, American University

This workshop acknowledged, first, that a collaborative relationship between the media and the research community is imperative, and, second, that a sometimes adversarial relationship exists between the two groups. Reasons for this tension are apparent. The research community tends to focus primarily on the negative effects of media violence and, in the case of youth suicide, the role of media in stimulating imitative behavior. The media, on the other hand, sees its role as reporting the news, rather than as serving as a means of education or prevention. Furthermore, there is little consensus as to the real negative impact of the media on suicidal and imitative behavior.

The workshop's first recommendation, therefore, urged support of definitive research--to be carried out as a collaborative venture--to define the real effects of media coverage on suicide and suicide attempts. Such a collaborative effort would help diminish the adversarial feeling between the two groups and establish a base of information that both groups could accept.

The media workshop also recommended researching, designing, and evaluating public information approaches to convey information about a broad range of potentially harmful or self-destructive behaviors. The goal is to encourage the media to teach and model desirable behaviors in a proactive way. A specific example of the research recommended would be to examine the effectiveness of traditional public service programs.

Panel on Barriers to Progress and Resources for Change

What barriers exist that could compromise success in efforts to prevent suicide among young people? And what are the prospects for hope and real change in this area? Those were the discussion questions directed to panel members toward the conclusion of this conference. Mark L. Rosenberg, M.D., M.P.P., panel moderator and conference chairman, invited the panelists to address the "realistic, real world, nitty-gritty obstacles" faced by organizations devoted to youth suicide prevention.

Panel members representing suicide prevention organizations were Cynthia Pfeffer, M.D., President of the American Association of Suicidology (AAS); Charlotte Ross, President and Executive Director of the Youth Suicide National Center in Washington, D.C.; and Alfred W. Del Bello, Chairperson of the National Committee on Youth Suicide Prevention in New York. Also on the panel were officials of Federal agencies concerned with the issue: Shervert H. Frazier, M.D., former Director of NIMH, and James O. Mason, M.D., Dr.P.H., Director of CDC.

Dr. Pfeffer, a child psychiatrist, pointed out two barriers from her perspective. First, parents and potential helpers do not recognize suicidal children. These adults often find it hard to properly prioritize the many problems that may be presented by a child who, for example, may be truant from school, abusing drugs, and suicidal. Second, these adults often do not respond appropriately by getting help when they do recognize a problem. This results, in part, from denial; partly from not appreciating the seriousness of the problem; partly from not knowing what "help" means; partly from the fear of "getting involved"; and partly from not knowing how to actually get help.

In terms of attacking these barriers, Dr. Pfeffer said, we must deal with the inexperience of so many people who work with suicidal youngsters and the general lack of information about suicidal youth behavior. Drawing on its strengths as a multidisciplinary organization, the AAS provides a forum for people representing various professions to come together and discuss what they know--and do not know--about suicidal behavior among youth. The AAS is also active in the arena of political action and in certifying suicide prevention centers. Dr. Pfeffer is most optimistic about progress being made through continuing multidisciplinary efforts to exchange information and work collaboratively.

Simultaneous progress is needed on two fronts, according to Charlotte Ross. "Action is needed as well as research," she said; we are frequently faced with inadequate data on which to base programs, "yet, action is demanded." People in the field need to "cautiously and carefully try creative approaches. . . and simultaneously evaluate research." She pointed to the suicide prevention centers and public awareness and education campaigns as examples of action programs that must be continued.

Ms. Ross also pointed to the possible negative consequences of mounting concern about youth suicide. For example, legislation recently was prepared in Indiana that would make suicide a crime in that State, thus reversing the progress of recent decades in decriminalizing suicide.

Alfred Del Bello, former Lieutenant Governor of New York, speaking from his perspective as founder of the National Committee on Youth Suicide Prevention and the New York State Council of Youth Suicide Prevention, was candid about the problems in getting politicians to focus on the issue of youth suicide. Because immediate results are not likely and because the topic is inherently not "upbeat," Mr. Del Bello said, "it is a terrible subject to deal with politically."

He found that the best approach to forcing recognition of the problem is to encourage the general public to be "concerned with the fact that their kids are killing themselves and that they ought to reach out to elected officials and get a response." If such pressure from the public and from the business community is forthcoming, there will be action from the Government, he predicted.

Dr. Mason concurred that if advocacy groups, communities, and States work together, they can have a tremendous effect. "When money is short, the Government listens to where the wheels squeak. And if you can squeak in unison, then the opportunities to do something are very great." However, if Congress hears "three different squeaks and they are not in harmony, then this gives them an automatic way out." One of the unifying themes that ought to come away from this conference is exactly what needs to be done, and how Congress and the President and the Secretary [of Health and Human Services] hear that single message.

Dr. Frazier seconded Dr. Mason's message, pointing out successful models from the war on cancer and the campaign to destigmatize mental illness: "When people get together and make their wishes known, they have an impact on the budget.'

CONCLUDING NOTE

This work group, in concluding, pointed out that:

- The state of knowledge about youth suicide--what causes it, who is at greatest risk, and how to prevent it--is much less developed than that of many other health problems.
- Acquiring this knowledge will require a carefully coordinated, sustained program of focused research and an organized multidisciplinary approach that integrates the diverse interests in the field.
- We need to evaluate rigorously the effectiveness of various interventions designed to prevent suicide.
- An effective approach to suicide prevention will need to involve committed individuals in health, mental health, education, and social services in both the public and private sectors.

Let us begin.

ACKNOWLEDGMENTS

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COMMISSIONED PAPERS

THE FEDERAL ROLE IN YOUTH SUICIDE RESEARCH AND PROGRAMS: THE LEGACY OF RECENT HISTORY

Margaret Gerteis, Ph.D., Deputy Director, Center for Health Communication, Harvard School of Public Health, Boston, Massachusetts

Mark L. Rosenberg, M.D., M.P.P., Assistant Director, for Science, Division of Injury Epidemiology and Control, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, Georgia

SUMMARY

The history of Federal involvement in the area of suicide prevention dates from the 1960s, when a special suicide unit was established at the National Institute of Mental Health (NIMH). Broadbased and eclectic in its approach, this unit supported a variety of researchers and clinicians and initiated two programs that helped shape the future of the suicide field: a graduate fellowship program at Johns Hopkins University combining the multidisciplinary study of suicide with clinical training, and a suicide prevention movement based on the English Samaritans' model, resulting in the nationwide proliferation of suicide "hotlines" and prevention centers.

Several factors contributed to the demise of the first suicide unit at NIMH and the programs under its jurisdiction. In the years that followed, NIMH took a markedly different approach to suicide, partly as a result of new program priorities and partly because of shifts in professional ideology. No longer a distinct program area, suicide was subsumed within the larger category of depression, a new NIMH priority. Clinically, suicide was at this time seen as an aspect of depression, appropriately treated not through the counseling methods of the suicide prevention centers but through more standard medical and psycho-therapeutic approaches.

Cut off from government support, the remaining suicide prevention centers began, in the 1970s, to build community-based constituencies of their own. As local citizens' groups began to focus on youth suicide in the early 1980s--responding to alarming stories about teenage "cluster" suicides and to the increased rate of suicide in younger age groups–they found natural allies in those community-based programs. They also found much to criticize in the NIMH approach--both its lack of interest in community service programs and its allegedly one-dimensional and professionally "elitist" definition of the problem. For the most part, the recent popular interest in youth suicide has sought different channels for official action–notably State legislatures and the U.S. Congress. The result, at the Federal level, has been the introduction of youth suicide prevention bills to fund school and community prevention programs, none of which have yet been passed into law.

This legacy has created serious difficulties for those trying now to shape a Federal policy on youth suicide. First, it has left deep divisions and mutual suspicions, especially between

community prevention programs and the academic community studying the phenomenon of youth suicide. Second, it has created serious shortcomings in research--most notably the absence of development and systematic evaluation of alternative prevention strategies and an overall lack of support for basic suicide research involving a variety of disciplinary perspectives.

Yet, the recent past also suggests positive models for remedying the situation. Although current financial constraints and the broad nature of the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) block grant program preclude recreating a single, integrated program of research and community intervention at NIMH, other integrative mechanisms are possible. The National Institutes of Health's (NIH's) model of working with advocacy groups to heighten public awareness, marshal public resources, and share in planning research needs and opportunities can be a useful one for NIMH to follow. The recent reorganization of extramural research within NIMH and the creation of a suicide research consortium can also promote a more integrated, collaborative, and multidisciplinary approach to basic research. The Centers for Disease Control's (CDC) involvement in suicide surveillance and prevention and its establishment of a Division of Injury Epidemiology and Control further promises to strengthen ties to community programs of prevention and intervention and to improve the quality of data available to researchers. To be successful, however, such efforts must be supported by reliable and continuing funding and directed by ongoing, coordinated planning strategies.

Youth Suicide as a Public Policy Issue

The identification of youth suicide as a social phenomenon warranting public attention and action is a quite recent occurrence, and results from two principal sources. The first is a growing popular perception that suicide among the young is now common, even epidemic, in proportion. Bolstered by statistics demonstrating a real increase in the rate of youth suicide over the past 25 years, this alarm concerning youth suicide is nevertheless not entirely warranted. As Dr. David Shaffer points out, suicide remains a rare "disease" in the general population from which most younger people are relatively immune (1). Moreover, even though the rate of suicide among the young increased most rapidly during the 1960s and 1970s, the trend did not excite the public until the 1980s, when the rate appeared to be leveling off. Probably of more immediate importance to the current perception have been the widely, and often luridly, publicized "cluster" suicides in otherwise apparently stable, middle-class communities in Plano and Clear Lake, Texas, and Westchester County, New York. Undoubtedly, as Dr. Shaffer suggests, youth suicide as a cause has appealed to a wide diversity of groups and individuals with very different social agendas. Whatever the explanation, the widespread public interest in youth suicide is evident from the proliferation of magazine and newspaper articles, the creation of at least two national advocacy groups on the issue, and growing demand at the State, local, and Federal level that government "do something" (prompting, for example, the Secretary's Task Force on Youth Suicide).

The second factor shaping public policy on youth suicide draws from a somewhat different source that has also been influenced by the popular forces described previously. Although a small group of researchers and public health professionals has long been interested in the problem of suicide among the young, the phenomenon recently has gained broader legitimacy as a focus of public health concern for two reasons. First, the statistical increase in suicide among the young, especially against a backdrop of declining or stable rates among older age groups, is a real cause for concern. Second, there has been a tendency in the past few years to redefine the public health agenda in terms not only of disease incidence and disease burden but also of years of potential life lost. Suicide among the young, although rare, is the second leading cause of death in the 15- to 24-year-old age group, accounting for more than 5,000 youth deaths each year and eliminating about 200,000 potential years of life in this age group alone (2,3). From this perspective, youth suicide is a significant public health problem and is part of an array of self-destructive and violent behavior patterns leading to premature death.

In this paper, we seek to examine the recent history of Federal policy in support of suicide prevention and research to elucidate past successes and failures, and to help shape better policies for the future. We begin with the assumption that suicide among the young is a legitimate public health concern that warrants our attention, although not in the alarmist terms often used by the media or public interest groups. In the following pages, we seek to analyze the pattern and structures of Federal support of activity relating to suicide; identify strengths, weaknesses, needs, and alternatives; and recommend feasible strategies for a Federal approach. The prevailing popular interest in youth suicide can provide the political momentum crucial to effective action. However, unless guided by solid and reliable research and information, this popular interest can also prompt hasty, ill-advised, and even harmful suicide intervention. These concerns shape the following discussion.

Methods

This paper originated with the concern that the recommendations developed by the Work Group on Strategies for the Future of the Secretary's Task Force on Youth Suicide should be based on an understanding of the real opportunities for, and constraints on, Federal action. We therefore set out to survey and examine the recent Federal experience in youth suicide research. The resulting paper is intended to provide a common reference for the Task Force in devising workable and effective strategies.

The research methods employed are appropriate both to historical analysis and to the case-method approach to political and bureaucratic analysis. We have relied, in part, on materials available in the public record--including Congressional hearings and testimony, public documents, and data provided by NIMH and other agencies. Our analysis relies principally, however, on an evaluation of the direct testimony of individuals involved in suicide research and programs, both inside and outside of government, provided by personal and telephone interviews. Although the list of those interviewed is far from exhaustive, we attempted to develop a representative sampling of key individuals from the various institutions and organizations associated with youth suicide efforts in the recent past.

Overview of Federal Involvement

Legislative Branch

The legislature, as the popular branch of government, has been the natural conduit for popular concern about youth suicide. Scarcely seen in the annals of Congress before 1980, the subject of suicide among the young began to appear regularly in a variety of contexts after 1983 as a result of the publicity surrounding the 1983 Texas cluster suicides and of popular pressure from parents' and other advocacy groups. In October 1983, for example, the House Select Committee on Children, Youth, and Families heard testimony from surviving friends and family of the Texas victims, lay activists, and health professionals on the general subject of "Teenagers in Crisis" (4). One year later, the Subcommittee on Juvenile Justice of the Senate Committee on the Judiciary, chaired by Senator Arlen Specter, held hearings on teen suicide and school programs, also focusing on the Plano episode and on the testimony of teenage acquaintances of suicide victims (5). The Subcommittee on Human Service of the House Select Committee on Aging, chaired by Mario Biaggi of New York, followed suit the next month, hearing testimony about adolescent suicide prevention programs in California (6). And in the spring of 1985, the Senate Subcommittee on Juvenile Justice reviewed the Federal role in addressing youth suicide (7).

The outcome of this activity is proposed legislation tentatively entitled "The Youth Suicide Prevention Act," strongly influenced by the lay public interest groups who have actively lobbied their legislators. As originally proposed by Representative Tom Lantos of California, the legislation called for creating an independent, 13-member Commission for the Study of Youth Suicide. The Commission would be comprised of the following: 1) Secretaries of Health and Human Services and Education; 2) eight members representing the American Association of Suicidology, the American Medical Association, the American Psychological Association, and the American Psychiatric Association; and 3) three members representing the public. The Commission was to report 90 days after its formation, at which point it would disband. Based on the Commission's recommendations, the Departments of Health and Human Services and Education were to establish a joint grants program for school- and community-based suicide prevention programs. Total authorization for the program was $1.5 million for the Commission, and "an amount not to exceed $6 million for each of fiscal years 1986, 1987, and 1988" for the grants program (8). Charlotte Ross of the Youth Suicide National Center, who strongly favored the Commission approach of the Lantos bill, believed that such an approach offered the best means of grounding suicide prevention programs in state-of-the-art research and professional consensus.

At about the same time, two other bills relating to youth suicide were introduced independently in the House. H.R. 1243, introduced by Representative Charles Bennett of Florida, called for an authorization of $1 million for the Director of NIMH to develop, publish, and disseminate information on the causes and prevention of suicide (9). H.R. 1099, introduced by Representative Gary Ackerman of New York, proposed a grants program under the auspices of the Department of Education to support the development of teenage suicide prevention programs in local educational agencies, with authorization not to exceed $10 million in each of the ensuing fiscal years (10).

Because they were introduced over a year ago, the suicide prevention bills have undergone several changes in response both to legislative politics and to the fiscal constraints of the Gramm-Rudman era. Although supporting a grants program for local suicide prevention programs, Mr. Ackerman and others opposed making such a program contingent on the Commission's recommendations. "Appointing a commission," they argued, has become tantamount to "doing nothing" in the public's opinion and not without cause (11). Moreover, a bill with a commission attached to it would have to be referred to the Committee on Energy and Commerce, where it would probably run into delays (12). The legislation currently pending in the House, H.R. 4650, cosponsored by Representatives Ackerman and Lantos, thus bears more resemblance to Mr. Ackerman's original bill than to the youth suicide bill first introduced by Mr. Lantos and others. H.R. 4650 calls for grants to be made available to local educational agencies, upon application to the Department of Education, to develop suicide prevention programs in the schools (13). Requested appropriations also will be reduced to $1 million for the first year, with funding for subsequent years left open. H.R. 4650 was reported as out of the Committee on Education and Labor and passed by the U.S. House of Representatives in July 1986. However, Senate action was not forthcoming in the 99th Congress. The bill's sponsors plan to reintroduce it during the 100th Congress (12).

In the meantime, the commission portion of the suicide prevention legislation has been pursued in the Senate by Senator Jeremiah

Denton of Alabama, who sits on the Judiciary Committee. The Senate bill calls for creating a center within the Department of Health and Human Services* with liaisons to private and public sector organizations. The center would serve as a conduit for information and the dissemination of technical assistance and would coordinate Federal youth suicide programs that cross jurisdictional boundaries. No Senate action was taken on the Denton bill during the 99th Congress. Because Senator Denton will not be returning to the 100th Congress, a new Senate sponsor will be sought (12,14).

Executive Branch

NIMH

For all practical purposes, most observers agree, the history of Federal involvement in the area of suicide dates from the early 1960s, when a special suicide unit was established at NIMH under the leadership of Dr. Edwin Schneidman. Since that time, NIMH--now one of three institutes under the umbrella of ADAMHA--has continued to be the principal locus of Federal activity related to suicide. Reflecting Dr. Schneidman's view that the study of suicide transcends virtually every traditional academic discipline and a wide spectrum of clinical specialties, the original suicide unit was broad-based and eclectic in its approach, assembling and supporting a variety of researchers and clinicians. (This spirit of eclecticism remains alive in the American Association of Suicidology, which Dr. Schneidman founded in 1967.)

Professionals in the suicide field associated the early NIMH unit, however, with two programs that it initiated. One was a graduate fellowship program based at Johns Hopkins University, directed by Dr. Seymour Perlin, that combined the multidisciplinary study of suicide with clinical training. The other and better known effort was the inauguration of a suicide prevention movement, based on the English Samaritans' model, that resulted in a nationwide proliferation of suicide telephone "hotlines" and suicide prevention centers supported by NIMH funding (15-19).

Several factors contributed to the demise of the first suicide unit at NIMH and the programs under its jurisdiction. In part, the suicide prevention movement was absorbed by (and lost in) the community mental health movement, the subsequent major programmatic thrust at NIMH. A later generation of clinicians and researchers trained in behavioral and biomedical research methods also criticized the "soft" approach taken by the NIMH unit and found no hard evidence to suggest that suicide prevention centers actually reduced the number of suicides. Losing favor, the suicide programs also fell victim to the financial constraints of the post-Vietnam era. Although the suicide unit continued under the direction of Dr. Harvey Resnik for a time after Dr. Schneidman's departure, both the unit and its programs were ultimately disbanded. Cut off from government support, the suicide prevention centers that remained began to build community-based constituencies of their own (1,16,17,19).

In the years that followed, NIMH took a markedly different approach to suicide, partly as a result of new program priorities and partly because of shifts in professional ideology. Individual staff members continued to monitor suicide statistics, and NIMH continued to fund a small number of investigator-initiated extramural research projects reflecting diverse behavioral, sociological, and biomedical aspects of suicide. Suicide was no longer a distinct program area, however, nor was there funding for interventions targeting suicide. Instead, suicide tended to be subsumed within the larger category of depression, a new NIMH priority. Clinically, suicide was at this time regarded as an aspect of depression, appropriately treated not through the counseling methods of the suicide prevention centers, but through more standard approaches using psychotropic drugs and psychotherapy (15-17,19,20).

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* For practical purposes, given Senator Denton's position on the Judiciary Committee, the commission has been initially placed in the Justice Department. Ultimately, however, the bill's sponsors plan to locate the bill in the Department of Health and Human Services.

As local citizens' groups began to mobilize around the issue of youth suicide in the early 1980s, they found natural allies in whatever community-based programs remained. They also found much to criticize in the NIMH approach--both its lack of interest in community service programs and its allegedly one-dimensional and professionally "elitist" definition of the problem (15-17,21). Partly in response to such pressures, a small Suicide Research Unit (SRU) directed by Dr. Susan Blumenthal was set up in 1983 within the Center for Studies of Affective Disorders in the Division of Extramural Research Programs. The unit initiated a broad agenda, including carrying out and coordinating research, holding conferences and workshops, increasing public and health care professional awareness, and providing medical direction for a videodisc on adolescent suicide assessment and intervention for medical students. The unit also collaborated with CDC on suicide surveillance studies and helped prepare informational materials with other government agencies. The unit coordinated funding of $1.2 million per year; but before it could reach full potential, the programs and functions of the SRU were distributed to other components as part of a larger Institute reorganization (6,7,18,19,21).

Since the creation of the ADAMHA Block Grant under the Omnibus Budget Reconciliation Act of 1981, which transfers jurisdiction over most service programs to the States, NIMH has been almost exclusively a research institution (21). Because NIMH's primary mission is research, the Institute has had problems in forging strong links to community groups. As with the National Institutes of Health, most research at NIMH is supported through Institute grants for investigator-initiated extramural research projects. Each grant application is referred for peer review by the ADAMHA grants referral officer to one of 12 public advisory committees serving as NIMH research review committees (22). Corresponding generally to NIMH program areas, at present these committees include the following:(23)

1) Basic Behavioral Processes Research Review Committee;
2) Cognition, Emotion, and Personality Research Review Committee;
3) Criminal and Violent Behavior Research Review Committee;
4) Epidemiologic and Services Research Review Committee;
5) Life Course and Prevention Research Review Committee;
6) Mental Health Behavioral Sciences Research Review Committee;
7) Mental Health Research Education Review Committee;
8) Mental Health Small Grant Review Committee;
9) Neurosciences Research Review Committee;
10) Psychopathology and Clinical Biology Research Review Committee;
11) Research Scientist Development Review Committee;
12) Treatment Development and Assessment Research Review Committee.

Each application receives a priority score based on scientific merit by the peer review committee before it is referred to the Director's Office. Final funding decisions are made by the Director, with the advice of the National Advisory Mental Health Council and in cooperation with Divisional and Branch Chiefs, based on NIMH funding and program priorities. Since 1975, the proportion of approved research projects actually funded has dropped from 52% to an estimated 32% (24).

Since 1979, NIMH has granted a total of 89 awards in the amount of approximately $17 million to extramural research relating to suicide. The importance of this activity relative to overall NIMH research support and recent trends in support for adolescent suicide research are suggested in Table 1. However, Congress has increased NIMH research appropriations by $45 million for fiscal years 1986 and 1987, earmarking $1.5 million to be spent explicitly on research relating to youth suicide.

Under the previous divisional structure at NIMH, responsibility for most extramural research was distributed among the following six branches of the Division of Extramural Research Programs: 1) applied research; 2)behavioral sciences research; 3) clinical research; 4) neurosciences research; 5) small grants; and 6) psychosocial treatment research. Most suicide research fell under the jurisdiction of the affective disorders unit of the clinical research branch, where "Project Depression" was housed. Since January 1986, however, a major reorganization has distributed substantive responsibility for extramural research among three new divisions: 1) Division of Clinical Research; 2) Division of Biometry and Applied Sciences; and 3) Division of Basic Science. The Clinical Research Division--the largest of the three--is now organized into six branches corresponding generally to DSM III disease classifications: Schizophrenia, Affective and Anxiety Disorders, Mental Disorders of the Aging, Child and Adolescent Disorders, Prevention, and Epidemiology and Psychopathology. Suicide research may now appropriately "belong" to any one of these six branches or to either of the other two extramural research divisions, although youth suicide would most likely fall under the jurisdiction of the Child and Adolescent Disorders Branch (19,20).

Intramural research at NIMH, under the direction of Dr. Frederick K. Goodwin, has been unaffected by the organizational reshuffling and changing program priorities that shape the Institute's extramural activities. Intramural research on suicide has focused on neurobiological markers of suicidal and violent behavior. NIMH research in this area has been closely associated with intramural research conducted under the auspices of the National Institute for Alcoholism and Alcohol Abuse (NIAAA) and the National Institute on Drug Abuse (NIDA) (25,26).

Total NIMH Support for Extramural Research, Suicide-Related Research and Adolescent Suicide Research* ($000)

	Total	Suicide and Suicide-Related (%)		Adolescent Suicide (% of Total)	
1979	130,910	1,053	(0.8%)	0	
1980	143,515	1,010	(0.7%)	0	
1981	140,259	884	(0.6%)	0	
1982	143,787	2,354	(1.6%)	0	
1983	158,300	2,791	(1.8%)	74	(0.1%)
1984	173,109	3,285	(1.9%)	311	(0.2%)
1985	192,985	3,770	(2.0%)	306	(0.2%)
1986	190,261	1,893	(1.0%)	458	(0.2%)

* Adolescent suicide research is defined as those NIMH-funded projects in which narrative descriptions specify a focus on adolescents. Age parameters, in this table, have not been explicitly defined.

Table 1.

To coordinate suicide research within NIMH and to establish priorities for spending the $1.5 million in recent Congressional appropriations, a suicide research consortium has been formed with representatives from each appropriate unit in NIMH. One of the consortium's first efforts, working with representatives from CDC, was to analyze data on suicide ideation and attempts from NIMH's epidemiologic catchment area survey--the largest such study in existence. The consortium further seeks to develop research spending priorities that will actively stimulate new research and supplement existing program research targeting suicide. The consortium has also begun the process of identifying suitable candidates to administer a coordinated suicide research program at NIMH (19,22).

Dr. Shervert Frazier, Chairman of the Secretary's Task Force on Youth Suicide and formerly Director of NIMH, has expressed a strong commitment to making the problem of youth suicide an NIMH priority. Notwithstanding the fiscal retrenchment currently affecting all areas of government, Dr. Frazier believes that Institute funding will be available over the next several years not only to target research priorities but also to support specific program interventions--for example, under the Institute's clinical training grants or other special programs (27).

Other ADAMHA Institutes

As head of ADAMHA, Dr. Donald Ian Macdonald sets the policy direction and oversees the work of NIMH, NIDA, and NIAAA. He emphasizes that the ADAMHA block grant, which transferred the service programs under the Administration's purview to the States and cut its overall budget by about half, has redefined ADAMHA's mission. "ADAMHA is not a service agency," he explains, "not because we don't want to be, but because the Congress has said we are a research, knowledge transfer, and public policy-setting agency." As part of this mission, Dr. Macdonald would like to see the ADAMHA Institutes establish ties to community-based citizens' and service coalitions. At the same time, however, those groups must begin to develop their own constituencies and find sources of support outside of the Federal Government. In this capacity, they may begin to function like the American Cancer Society, the American Heart Association, and other advocacy groups that work with the National Institutes of Health to heighten public awareness and marshal public resources toward research needs and opportunities (21,24,28).

Dr. Macdonald has both a strong interest and background in working with community programs aimed at adolescents and has made the problems of youth a clear ADAMHA priority. In the area of youth suicide, Dr. Macdonald would like to see ADAMHA move away from the mental illness/depression model that has dominated in recent years, and has been a particular source of frustration to citizens' and patients' groups. He has a particular interest among the relation between substance abuse and suicidal behavior in youth and would like to see more collaboration among the ADAMHA Institutes on this connection in addition to the investigations currently being pursued by intramural researchers (21).

Historically, NIMH has received about two-thirds of all ADAMHA research appropriations; NIDA and NIAAA receive slightly more than one-fifth and one-tenth, respectively, of ADAMHA funding. Since 1980, the latter agencies (especially NIAAA) have received a slightly larger proportion, reducing the NIMH share to about 60%. For the past 3 years, however, the annual research budgets of all three Institutes have remained the same--a total of about $300 million (24).

CDC

Although NIMH has been the primary conduit for federally supported suicide research, CDC, another Public Health Service agency in the Department of Health and Human Services, has become the principal public health prevention agency of the Federal Government. CDC's suicide-related activity, for the most part, is much more recent than that of NIMH. Growing public health interest in the causes of premature death led CDC in the early 1980s to expand beyond its traditional focus on communicable and infectious disease, to violence and to apply the traditional surveillance principles to the analysis of suicide. In 1983, the Violence Epidemiology Branch was established under the directorship of Dr. Mark Rosenberg. When staff of the new unit began to hear reports of cluster suicides in Texas, Epidemic Intelligence Service (EIS) officers--CDC's investigative field officers--were dispatched to investigate the suicides in cooperation with the Texas Department of Health. Since then, this unit has continued to gather and analyze statistics on trends in youth suicide and is studying the phenomena of suicide "contagion" and "clusters" in depth. It has also developed guidelines to help local officials respond to crises like those in Texas and is continuing to work on methods for improving the identification and reporting of suicides and suicide attempts (30).

In response to a National Academy of Sciences report on injury in America, CDC recently organized a Division of Injury Epidemiology and Control under the leadership of Dr. Stuart Brown. Violence is now subsumed under this Division as "intentional injury," whereas accidents come under the rubric of "unintentional injury." Once vulnerable to Federal funding cuts because of its apparent duplication of NIMH research support in the area, the intentional injury section now shares equal status with the other areas of injury prevention and control--a major program priority within CDC (30).

Although CDC has not traditionally been a research grant-making agency, it has been able to contract with outside researchers and consultants on particular problems--for example, in the analysis of cluster suicides. More importantly, as an outcome of the creation of the new Injury Division, CDC has received some $7.8 million in funds diverted from the Department of Transportation for the direct support of research ($5.8 million) and of "centers of excellence" ($2 million) in the area of injury prevention and control (31). Half of this research budget has been targeted to motor vehicle injuries, leaving approximately $2.9 million to support research on all other types of injury, including suicide.

CDC's Director, Dr. James Mason, emphasizes that CDC's mission is to promote health and prevent disease at the community level. CDC's principal strength as a public health agency lies with its ties to local public health officials and agencies, cultivated over the 40 years of CDC's history. These ties provide access both to the data sources needed to identify particular problem areas and to an organizational structure for the diffusion of problemsolving technology (19,32).

Other Government Agencies

Other agencies within the Department of Health and Human Services (DHHS) and other executive departments have become involved in youth suicide primarily because of their legal and moral responsibility for the minors under their jurisdiction. Their roles, far more limited than those of NIMH or CDC, are briefly summarized below.

The Administration for Children, Youth, and Families (ACYF) in the Office of Human Development Services (OHDS) at DHHS is responsible for the runaway and homeless youth program that operates 265 shelters nationwide. In 1984, ACYF commissioned a report by Drs. David Shaffer and Carol Caton on suicidal behavior among runaway youth in New York City. Thereafter, ACYF announced the availability of $600,000 to fund a total of seven projects aimed at developing emergency programs and interventions to be used in runaway shelters. Working with ACTION for community volunteers, ACYF has also developed brochures, for use by community agencies, outlining the "danger signs" of suicidal behavior and recommending preventive steps to be taken. The Office of Human Development Services also spearheaded the first National Conference on Youth Suicide, targeted to mental health professionals, held in the spring of 1985 (7,33).

The Office of Juvenile Justice and Delinquency Prevention (OJJDP) in the Department of Justice monitors suicide among incarcerated youth as reported in the data of the National Census of Jails conducted by the Bureau of Justice Statistics. The OJJDP's interest in deinstitutionalizing or segregating juvenile offenders has been motivated in part by the problem of suicide among incarcerated youth. The OJJDP also participated in the OHDS National Conference on Youth Suicide (34).

In collaboration with CDC, the Indian Health Service in the Public Health Service has formed a special task force to investigate the problem of suicide among native Americans. The Department of Defense has made similar arrangements with CDC to study the problem in the armed forces, particularly in the Air Force (29).

Research Needs and Alternatives

Evaluation of Suicide Prevention Programs

One of the most pressing needs in the area of suicide research from a public policy perspective is to develop and evaluate intervention and prevention strategies. The absence of such work has been the most consistent criticism and source of frustration with the NIMH approach in recent years and has been most apparent whenever officials have been called upon to explain to Congress or the public what they are doing about the problem (7). In the meantime, private citizens and organizations lobbying State and local legislators or officials have taken the initiative for developing programs targeting youth suicide, and these groups have produced a groundswell of activity.

Yet, serious questions have been raised about these programs. Hotlines and suicide prevention centers, for example, have been criticized for failing to reduce the actual rate of suicide in communities. However, as Dr. Schneidman suggests in the programs' defense, such efforts might have other palliative effects on the "level of perturbation" in a community. Is the suicide rate alone the appropriate measure of a program's success (15)? Some have also questioned whether suicide education programs in the schools contribute to an atmosphere of hysteria or melodrama that only exacerbates the problem. Charlotte Ross, Executive Director of the Youth Suicide National Center and one of the principal architects of the school program in California, argues strongly for the need to evaluate suicide programs and to tailor such programs to the needs of particular communities. And yet, she acknowledges, countless communities are now in the process of implementing school-based programs without any notion of how to assess or evaluate their potential impacts (35,36). Stronger evidence suggests that press coverage or media campaigns designed to heighten awareness about the problem of youth suicide may, in fact, have a deleterious effect. Yet, few serious inquiries have been undertaken that might guide responsible media strategies in the future. Research is needed to develop appropriate criteria to evaluate such programs, to assess their efficacy on the basis of these criteria, and to explore the factors that contribute to their success or failure.

At present, the two principal channels for funding research on suicide prevention programs at the Federal level are:

1) through the regular peer review mechanism for investigator-initiated research at NIMH;

2) in response to CDC's request for proposals for injury prevention and control research.

However, no programs currently target suicide prevention directly as a research priority. Although the most recent Suicide Research Unit at NIMH planned to issue a contract for evaluating suicide programs, no

Request for Proposals (RFP) was forthcoming by the time that unit was disbanded (6). Without an explicit priority targeting youth suicide issues at NIMH, the independent chances of any investigator-initiated proposal being funded would be, at best, about one in three **after** it had passed the peer review, based on current funding statistics. NIMH's suicide research consortium will address the question of research priorities and might target this issue. That group's research agenda, however, has yet to be developed (19,22).

CDC's new injury research program explicitly addresses the issue of evaluating intervention strategies, and thus may lend itself more readily to the purpose (31). Through its "centers of excellence," CDC may also develop a more heterogeneous network of academic researchers than is now represented in NIMH's constituency--including, for example, behavioral scientists, economists, policy analysts, biostatisticians, and epidemiologists, as well as mental health or medical clinicians and researchers. CDC also has the means to disseminate its research findings through local communities--a crucial need in this divided arena. However, CDC's extramural research funding is for one year only. Moreover, because half of the $5.8 million in current research funding must be spent on motor vehicle injury, less than $3 million remains to support research on all other types of unintentional and intentional injury. CDC is not ordinarily a grant-making agency and the availability of suicide prevention alternatives cannot be accomplished in a few small short-term efforts. It requires an ongoing strategy to support collaborative research at multiple sites and a continuous effort to disseminate research findings to community organizations.

Quality and Coordination of Research

A more generic problem in basic suicide research is that it "belongs" to no one academic discipline or professional specialty, nor to any well-defined group of disciplines. As Dr. Seymour Perlin has observed, suicide research is something of a "bastard" field, lacking a distinct identity. Recognizing this problem, Dr. Schneidman took an eclectic approach in organizing the suicide center at NIMH in the early 1960s. In regard to identifying suicide research, the center is almost uniformly remembered as an intellectual success by those who participated in it, even if its programs later fell out of favor (15-18). A similar motive of promoting a multifaceted (albeit quite different) approach prompted the decentralization of suicide research in NIMH's most recent reorganization and the abandonment of the single Suicide Research Unit in favor of a consortium (19).

Given the diversity of interests in the study of suicide, how can good suicide research best be promoted? Dr. Darrel Regier, Director of the new Division of Clinical Research at NIMH, argues that the best research comes from good researchers pursuing their own interests in their own respective fields. This rationale has produced a preference at both NIH and NIMH for investigator-initiated, as opposed to Institute-solicited, research. Concerning suicide, however, this preference can create practical difficulties.

Good suicide research requires identifying and rigorously assessing a wide variety of biomedical, psychosocial, and psychopathological factors. Promoting such research thus requires a high degree of sophistication and multidisciplinary expertise not only on the part of researchers but also on the part of the peer-review committees evaluating research proposals. Because the traditional peer-review system favors narrowly defined research questions within traditional disciplines, multidisciplinary suicide research is not likely to fare very well unless it is encouraged and targeted by explicit, well-articulated Institute research priorities.

The weak showing of suicide research among investigator initiated peer-reviewed proposals is suggested by the relative paucity of funded research relating to suicide, especially to youth suicide, before 1983, when suicide became at least an informal priority at NIMH. Although this is one of the tasks of the suicide research consortium, NIMH does not yet have a clear set of priorities relating to youth suicide that would allow it to target research opportunities (19,22). The promotion of good suicide research, however, will also require establishing a separate peer-review process performed by research review committees particularly acquainted with the practical difficulties of suicide research.

Data

One of the most frequently mentioned problems of suicide research is that of collecting reliable data. This difficulty is exacerbated because neither CDC nor NIMH, the two national agencies with a primary interest in suicide, has jurisdiction over the collection of that data. NIMH gathers data on the use of the mental health system and CDC collects statistics on reportable communicable and chronic diseases. But suicide falls within neither category. Instead, most statistics on completed suicides are gathered by the National Center for Health Statistics (NCHS) in DHHS, as part of its monitoring of mortality and morbidity in the United States. (Other sources include the Department of Justice's National Census of Jails.) In recent years, both NIMH and CDC have relied on NCHS data to track and analyze suicide trends among different age and demographic groups, and to some extent, this work has been duplicative (18,19). NIMH has also undertaken the first large-scale assessment of suicide ideation and attempts through analysis of data gathered in its own epidemiologic catchment area survey (19).

Because CDC has more direct access to the local departments of health and medical examiners who determine the causes of death which are eventually reported to NCHS, that agency ought to assume the lead role in monitoring suicide statistics. Recurrent criticisms among suicide researchers have addressed the absence of uniform criteria for determining suicide as a cause of death, the natural tendency to underreport such deaths, and the absence of incentives for coroners and medical examiners to fully investigate deaths suspected as suicide. Working with a larger number of other organizations and individuals, CDC has begun to develop guidelines to encourage uniform guidelines, it is the Federal agency in the best position to work with coroners, medical examiners, and local public health officials to identify practical obstacles and encourage the adoption of national reporting guidelines (29,32).

Another problem with data in suicide research relates to the rarity of suicide. Aggregate data, even when reliable, do not offer much insight into the etiology of suicide, because national trends are influenced by a variety of social, cultural, and economic factors. On the other hand, the quality of more detailed prospective or retrospective studies is often compromised by the small sample sizes involved. Larger samples would require the collaboration of many centers and much larger levels of funding. Moreover, because different investigators use different criteria for selecting their samples (suicide ideators, attempters, or completers, different age groups, etc.), generalizations often cannot be made beyond the particular circumstances of each study. Mechanisms are needed to promote collaborative research and the use of uniform research criteria. Although the suicide research consortium at NIMH appears to have set this task on its agenda, it does not yet have explicit plans to develop strategies for promoting collaborative efforts (22).

Coordinating Mechanisms and Strategies

Perhaps the first question on Federal program coordination is whether youth suicide efforts are best focused at a single site or dispersed among many. A single site offers the advantage of bringing together diverse perspectives in an inherently disintegrated field, serving as a central clearinghouse of information for professionals and the lay public, and coordinating multifarious activities relating to suicide. Various alternatives have been suggested at various times. The idea of establishing an independent government commission was embodied in an earlier version of the Youth Suicide Prevention bill, although it fell victim to legislative politics (8). Others have suggested providing a Federal subsidy for a private, nonprofit commission on youth suicide--for example, a commission built around one of the two existing national advocacy centers. The independent commission approach tends to be favored by lay advocacy and professional groups who see it as an opportunity to participate more actively in public policymaking (6,14,16,36,37). Alternatively, youth suicide activities could be focused within a single center of an existing government agency, as was done in the suicide center at NIMH in the early 1960s and at the Suicide Research Unit of the early 1980s. On a more limited scale, the current Senate legislation similarly calls for the establishment of a center on youth suicide within DHHS.

The success and professional legitimacy of any single suicide center or unit, inside or outside of government, however, will depend on its funding, staffing, and leadership. A single suicide unit would have to be viewed as genuinely representative of the diversity of interests in the field or else it would be vulnerable to the appearance of "capture" by a single interest group. Such a unit would need both the leadership and the authority to coordinate the activity of disparate groups, and it would need sufficient funding to carry out a broad range of activities. Lacking these qualities, any single suicide center would be more form than substance. The comparative contemporary reputations of the two suicide units at NIMH are illustrative: the Suicide Research Unit was generally regarded as a poorly funded and inadequately staffed "token" effort (15-17,19,36).

In the current political climate of limited government and financial retrenchment, the bureaucratic solution of creating yet another unit of government is not likely to be looked upon with favor. The marked reduction in scope of the commission proposed in the pending youth suicide legislation reflects this disfavor. The commission currently proposed in the Senate legislation lacks both the power and the authority to accomplish much more than a general clearinghouse function. Although focusing activity in a single nonprofit organization outside of government may avoid some of these practical political difficulties, no existing organization seems likely to transcend the broad and deep divisions that currently separate lay, professional, medical, nonmedical, and competing advocacy groups in the suicide field. Even those who favor the idea of a single focus for youth suicide activities in principle are skeptical that such a focus can be achieved (15,17,19,32).

The alternative to a single locus of suicide activity is a multisite, multiagency, and multifaceted approach overseen by one or more lead agencies and integrated (at least loosely) through some variety of coordinating mechanisms. Although there is no formal understanding between NIMH and CDC, Dr. James Mason, CDC Director, believes that there is a fairly natural division of labor between the two agencies which could readily translate into a memorandum of understanding on youth suicide, designating NIMH the lead agency on matters relating to suicide research and CDC as the lead agency on data collection, public health, and community investigative and educational activity (19,27,32).

That designation leaves unresolved, however, the critical problem of coordinating and communicating with the other diverse interest groups currently active in the area of youth suicide. Although several mechanisms have emerged inside government to coordinate activity or share information among agencies and offices, no formal channels of communication have been established with community, professional, and advocacy groups that are rapidly pursuing their own agendas. CDC, as we have suggested, may have a mechanism for establishing communications channels through its community programs. CDC and NIMH also have the authority to call together ad hoc public advisory committees on any number of special topics and to sponsor workshops and conferences. The NIH has successfully used these activities to communicate research and clinical findings and to involve constituency groups in the planning process (28). In the area of suicide, however, such mechanisms have been used only very broadly, in spite of the well-intentioned plans of the late Suicide Research Unit. These Public Health Service agencies could enhance their legitimacy and strengthen their constituencies by routinely involving representative public advisory groups in an interactive and iterative planning process.

CONCLUSIONS AND RECOMMENDATIONS

Lessons From the Past

The legacy of the recent past in Federal policy on suicide has created some serious obstacles for those who are now attempting to address the problem of youth suicide as a public health policy issue. Above all, past Federal policy has left deep divisions, mutual hostilities, and suspicions throughout the field. In part, these represent differences of opinion between medical and nonmedical professionals as to the best preventive and therapeutic approaches. More serious, however, are the factors that divide lay community groups seeking practical solutions to the problem of youth suicide from the public health and mental health research community studying the phenomenon. A very real danger is that the community groups will pursue their own agendas because they are suspicious of researchers and critics and resistant attempts to evaluate their programs critically. Yet, serious questions have been raised, with some evidence to support the theory that some programs may be not only ineffectual but harmful, exacerbating the problem by raising the level of anxiety among young people.

A second and related problem growing out of recent history is that previous policy has left (at least until quite recently) a very weak base of support for suicide research. In the absence of particular program priorities at NIMH, new research in the field has received little encouragement, and very little funding has been directed toward suicide research through the regular extramural grants program. This weak base of support has left serious shortcomings in our current knowledge about suicide etiology, primary prevention, or therapeutic intervention. Most importantly there has been a paucity of applied research, and even of interest, in evaluating alternative intervention strategies, despite the serious questions raised about the programs that are rapidly proliferating. Moreover, fundamental problems in basic research remain and they can only be resolved through coordinated, collaborative studies based on uniform research criteria and guided by explicit research priorities.

Given this legacy, what does recent history suggest as workable strategies for the future? The history of suicide research points to the need for integrative mechanisms--both to integrate public health and mental health research with community service programs, so that they can inform each other, and to promote collaborative, multidisciplinary research. Although the early NIMH suicide unit's approach to prevention has since come under fire, that unit was generally regarded as successful at promoting an integrated approach to the problem. The idea of concentrating the effort now in a single suicide unit--either within NIMH or in an independent commission--has received some attention, but at present, such a unit appears to be an impractical option. In the current political and fiscal climate, a new unit of bureaucracy is not likely to be looked upon with favor. And even if it were created, it probably would not be funded or staffed sufficiently to make it truly representative, leaving it vulnerable to the appearance of representing a single interest group or to tokenism.

There are, however, alternative integrative mechanisms. One mechanism that has been used quite successfully by some institutes at NIH, but relatively little by NIMH, entails actively involving advocacy and professional groups and field researchers in a process of research-program planning and information dissemination. Such an ongoing, iterative process can help create a community of interest around youth suicide, mobilizing public awareness and support and marshaling resources. A successful working relationship, however, requires not only initiative on NIMH's part but also a recognition on the part of the advocacy and professional groups that the Federal Government role has changed.

Another promising model to promote collaborative and multidisciplinary research is NIMH's current decentralized approach, spreading jurisdictional interest in suicide research among many clinical branches and divisions. Although the NIMH consortium can help to coordinate the relevant research within NIMH, it could benefit from a broader range of input by being expanded to include researchers from the field and from related areas of adolescent risk-taking behavior, including those represented in other Public Health Service agencies.

Finally, CDC's recent involvement in suicide surveillance and public health issues is a promising development. CDC can use its well-developed network of relationships with local public health officials and departments to improve the quality of baseline statistics, support the development and evaluation of preventive interventions, and bridge the information gap between the research and service communities. In this way, CDC can help fill the void left by NIMH's withdrawal from the provision of services.

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ESTIMATING THE EFFECTIVENESS OF INTERVENTIONS TO PREVENT YOUTH SUICIDES: A REPORT TO THE SECRETARY'S TASK FORCE ON YOUTH SUICIDE

David M. Eddy, M.D., Ph.D., Center for Health Policy Research and Education, Duke University, Durham, North Carolina

Robert L. Wolpert, Ph.D., Center for Health Policy Research and Education, Duke University, Durham, North Carolina

Mark L. Rosenberg, M.D., M.P.P., Division of Injury Epidemiology and Control, Center for Environmental Health and Injury Control, Centers for Disease Control, Atlanta, Georgia

SUMMARY

In this paper, we describe the use of a model to analyze the effectiveness of six interventions for decreasing youth suicides in the United States and the use of a questionnaire to query experts about factors that determine the effectiveness of those interventions. The interventions examined are the following: (1) affective education, to help youth understand and cope with the types of problems that can lead to suicide; (2) early identification and treatment of youths at high risk of committing suicide; (3) school-based screening programs; (4) crisis centers and hotlines; (5) improved training of health care professionals in treating problems among youth that can lead to suicide; and (6) restriction of access to three main methods of suicide--firearms, medications, and high places. This study indicated a wide range of uncertainty about each intervention's effectiveness and the range of uncertainty among experts about any particular intervention exceeded the differences among the best estimates for each intervention. The study also indicated that no single intervention, or even all six interventions combined, could be considered a "cure" for youth suicides. Additional empirical research about the factors that determine the effectiveness of youth suicide prevention programs followed by careful analysis, is needed before large-scale programs are launched. Given the urgency of the youth suicide problem, we recommend a strategy of (1) analyzing the available information; (2) conducting short-term research to gather empirical data for estimating both the effectiveness and costs of different interventions; (3) analyzing the results of that research to set preliminary priorities; (4) designing pilot projects to evaluate the most promising interventions; and (5) planning large-scale interventions based on the evaluation of the pilot projects.

INTRODUCTION

Youth suicide is an important social problem. In the United States, suicide is the second leading cause of death for persons 15 to 24 years of age. More than 1 in every 1,000 children will commit suicide before reaching the age of 25. This year in the United States about 7 of each 8,000 youths aged 15 to 24 years will commit suicide, totaling about 5,000 deaths. For comparison, accidents, the leading cause of death for persons 15 to 24 years will claim about 17,000 youths in this age group; about 7,500 will be murdered; and about 4,800 will die of a specific disease. Suicide rates for certain subpopulations are nearly double the average and seem to be rising.

Many interventions have been proposed to reduce youth suicides. However, estimating the effectiveness of these interventions can be extremely difficult because of the many factors that must be considered. First, at least four major types of psychiatric problems can increase the chance a youth will commit suicide: depression, manic-depressive disorders, character disorders characterized by impulsivity and aggression, and schizophrenia. (In addition, many youth who commit suicide do not display psychiatric symptoms.) Youths with each type of psychiatric problem respond to different interventions in different ways. Second, the proposed interventions have many different mechanisms of action, including prevention (e.g., affective education), early detection (e.g., school-based screening programs or programs to educate families about the symptoms of psychiatric problems), improved treatment, and legal measures such as restricting access to guns. Third, the success of each type of intervention is determined by many unknown variables. For example, estimating the effectiveness of a suicide hotline requires estimating the proportion of potential youth suicides who would be inclined to call such a hotline if they had access, the proportion of those who actually have access, the success of the hotline's personnel in thwarting the immediate suicide attempt, and the likelihood that a youth who survives the immediate crisis through the aid of the hotline will not commit suicide at a later time.

Unfortunately, very little empirical research exists that evaluates or compares the effectiveness of different interventions to prevent youth suicide. At present, policy makers have little choice but to rely on the subjective judgments of experts. For other health problems, analytic models are effective for soliciting and using knowledge about the cost and effectiveness of a range of interventions to identify the best ways to use limited resources. For cancer control, for example, mathematical models have been used to estimate the effectiveness and costs of a wide variety of prevention, screening, and treatment programs and to set priorities for public programs (WHO 1986). We tried to develop an analogous model for youth suicide to help identify the most cost-effective interventions.

In this paper, we describe the use of a model to analyze the effectiveness of six major types of proposed interventions for decreasing youth suicides in the United States and the use of a questionnaire to query experts about factors that determine the effectiveness of those interventions. The interventions examined are the following: (1) affective education, to help youths understand and cope with the types of problems that can lead to suicide; (2) early identification of youths at high risk of committing suicide, to bring them into treatment; (3) school-based screening programs; (4) crisis centers and hotlines; (5) improved training of health care professionals in treating conditions that can lead to suicide; and (6) restriction of access to three main methods of suicide--firearms, medications, and high places.

METHODS

To derive preliminary estimates of different interventions' effectiveness in decreasing suicide, we developed a questionnaire to solicit the subjective judgments of experts in various aspects of the youth suicide problem. To assist the experts, we broke the problem into components and directed the questions at specific factors that could be researched or accessed through the experts' experience.

Specifically, the questionnaire distinguished four major categories of potential youth suicides: depressives, manic-depressives, "impulsive-aggressives," and those not manifesting the symptoms of identifiable psychiatric disorders. Many psychiatrists believe the first three categories have much higher suicide rates than the population at large, so individuals in those categories are described as "high risk," whereas those in the fourth category are described as "normal risk." Although persons diagnosed as schizophrenic also have a higher-than-average risk of suicide, we did not ask separate questions about this group because the symptoms necessary to diagnose schizophrenia are frequently not identified before age 25. Additionally, a recent study of almost 200 adolescent suicides did not identify a significant number with schizophrenia (David Shaffer, 1986). The effect of each intervention was analyzed for each category separately, and the results were combined. These categories are defined in Appendix A.

To structure the questions, the questionnaire used a simple framework that identified the various points at which each intervention would prevent a suicide (Figure 1). (Figures appear at end of chapter.)

The framework starts (on the left of Figure 1) with a potential youth suicide, which we define as a youth who would commit suicide before the age of 25 in the absence of **any** intervention (including current treatment interventions). If a suicide in such a youth is to be prevented, he or she must first be identified as a potential youth suicide, he or she must then be offered and accept a treatment, and the treatment must be successful in preventing the suicide. Therefore, the probability that a potential youth suicide will actually commit suicide depends on whether the steps of this process are accomplished. A suicide will result from a failure at any step--if the youth is not identified, if the youth does not receive appropriate treatment, or if the treatment fails.

Each of the six interventions examined in the questionnaire affects one or more of the three steps. For example, school-based screening is intended to identify potential youth suicides and bring them to treatment. The screening's effectiveness depends on how much it increases the probability that a potential youth suicide will be identified. Education of parents and "gatekeepers" (i.e., persons who come into contact with and talk to suicidal youth, such as health professionals, hairdressers, gym teachers, and bartenders) is also intended to increase the probability that a potentially suicidal youth will be identified and offered treatment.

Interventions that aim to improve treatment are intended to decrease the probability that a youth identified as a potential suicide will actually commit suicide. At present, not all potentially suicidal youths are offered any treatment, and those who are do not all receive optimal treatment. To analyze this problem, we grouped all possible treatments for each psychological condition into three categories--no treatment, suboptimal treatment, and optimal treatment. Detailed definitions of the treatment levels for each condition are provided in Appendix B. One possible treatment intervention involves ensuring that specialists know and offer an optimal treatment for each type of psychiatric problem. Another treatment intervention involves educating other health care professionals (nonspecialists) to refer potentially suicidal youth to appropriate specialists. Such interventions are intended to help ensure that a youth identified as potentially suicidal actually receives optimal treatment.

School-based affective education programs appear on the basic framework at two points. Such programs alert both potential youth suicides and their friends to the signs and symptoms preceding a suicide. School-based education programs are intended to increase the probability that potential youth suicides will be identified (either by themselves or by their friends) and referred for treatment before committing suicide.

Another more direct effect of affective education involves helping potentially suicidal youths and their friends to be more aware of the suicide problem and the steps to correct it and helping them to be more aware of the psychological stresses all youths face. When successful, affective education might itself be a form of treatment. Even without referral to a professional, the self-awareness or the intervention of a friend might prevent a potential youth suicide.

A crisis center also has several effects. The direct effect is that if a potential youth suicide victim contacts a crisis center, he or she might be talked out of committing suicide at that time. The suicidal person might or might not commit suicide at a later time. Secondarily, a potential youth suicide might not only be prevented at that time, but might also be brought into a treatment program. These effects would be registered as an increase in the probability that a potential youth suicide would be identified and as an increase in the probability that a potential youth suicide would receive optimal treatment once identified.

Finally, the effect of interventions designed to restrict access to suicide methods (e.g., guns, drugs, and high places) can be viewed as a form of treatment. Obviously, such interventions do not treat the underlying conditions leading to suicide, but they can prevent an immediate suicidal event. In some cases, restricting access to suicide methods might thwart the suicidal impulse long enough to enable the potential youth suicide victim to pass through a personal crisis and revert to nonsuicide. (The interventions are defined in Appendix C.)

The questionnaire was designed to estimate the interventions' effectiveness by identifying all the important factors that could determine their impact and to focus questions on each specific factor. (The questionnaire is attached as Appendix D.) This approach helps narrow the scope of factors the respondents must consider at one time and helps ensure accurate answers. For example, for an estimate of the overall impact of a crisis center or hotline on reducing the chance that a youth would commit suicide, questions were asked about four topics: (1) the proportion of potential youth suicides who would have access to a hotline; (2) the proportion of those with access who would be inclined to call, (3) the proportion of those who call who would have their immediate suicide prevented, and (4) the proportion of these who would not become suicidal again before age 25 either because they changed or because they were brought into a successful treatment program. Thus, the experts were never asked a global question, such as "how much will Intervention A reduce youth suicides," which would require them to consider dozens of factors or venture a wild guess. Rather, they were asked about specific factors one at a time, and the overall effect of each intervention was calculated from their answers about the individual factors, according to the specified framework and the laws of probability theory.

We submitted the questionnaire to 29 individuals identified by the Secretary's Task Force on Youth Suicide. These individuals were not at all intended to be a representative sample of all suicide "experts." Instead, they were selected because they either had many years of experience working on youth suicide prevention, or had expertise in a particular area covered by the questionnaire such as screening, delivering mental health services, or assessing the quality of health services. Fifteen individuals returned the completed questionnaire. Estimates of each of the interventions' impact were then calculated separately for each of the experts.

The results are presented for each of the individual experts separately and anonymously. We did not combine or "pool" the experts' estimates.

RESULTS

The results of the questionnaire are shown in Figures 2-10. Figure 2 indicates the estimated effect of **current** treatment programs in preventing suicides. The horizontal axis indicates the proportion of potential youth suicides prevented by existing treatment programs, and each mark on the axis indicates the calculated estimate of a particular expert. The experts estimated that 1 percent to 39 percent of potential youth suicides (that would occur in the absence of any treatment) are currently prevented by existing treatment programs (Figure 2). On average, the experts estimated that approximately 10 percent of youths who would commit suicide in the absence of any intervention are currently being prevented from committing suicide by existing treatment programs. The median was 6.5 percent. A 10 percent reduction in youth suicides would represent approximately 500 suicides prevented each year in the United States.

The experts surveyed expect programs designed to improve the treatment of potential youth suicides by health and mental health professionals to decrease youth suicides from 1 percent to about 39 percent (Figure 3). The average of the estimates predicted reduction in potential youth suicides (in addition to the reduction already achieved by current treatment) of 11 percent. The median was 8 percent.

Figure 4 describes the estimated impact of an intervention designed to identify potentially suicidal youth and bring them treatment, either by making parents more aware of the signs and symptoms of psychiatric problems or by helping gatekeepers (e.g., teachers, barbers, beauticians, bartenders, gym teachers, religious counselors, neighbors, or relatives) identify potential youth suicide victims and bring them to treatment. The experts' answers indicate that such an intervention could reduce the current number of youth suicides by less than 1 percent to about 41 percent. The average of the answers was a reduction in youth suicides of about 13 percent, and the median was 8 percent.

Screening school-age children was estimated to reduce youth suicides by less than 1 percent to 13 percent, with an average and median reduction of 8 percent.

Crisis centers and hotlines were estimated to reduce youth suicides by less than 1 percent to 18 percent. The average of the answers predicts reduction in youth suicides of about 7 percent, with a median of 4 percent.

School-based affective education programs might be expected to reduce youth suicides by less than 1 percent to 17 percent (Figure 7). The average of the estimates was a 6 percent reduction in youth suicides, and the median was 4 percent.

The last set of interventions involves restricting access to various suicide methods, such as firearms, medications, and high places (e.g., bridges, towers). Estimating the impact of these interventions was aided by data that indicated that about 62.5 percent of youth suicides are committed with firearms (approximately 80% of these are handguns); about 6 percent of youth suicides are due to poisonings by prescription medications (e.g., tranquilizers and psychotropic agents); and about 3 percent of youth suicides are caused by jumping from high places. About 30 percent of youth suicides are caused by other means, such as hanging and poisoning by carbon monoxide. Thus, restricting access to any one of these suicide methods could have an impact no greater than the proportion of suicides caused by each of these means. For additional assistance in estimating the impacts of these interventions, we asked the experts to assume that an intervention designed to restrict access to firearms would actually prevent only 50 percent of potential youth suicide victims from having access to firearms. Similarly, we asked them to assume that a program designed to restrict access to medications would actually restrict access for 75 percent of potential youth suicide victims, and that a program designed to restrict access to high places would actually restrict access for 25 percent of potential youth suicides. Thus, the maximum possible impact of interventions to restrict access to firearms, medications, and high places is a suicide reduction of 31 percent, 4.4 percent, and 0.7 percent respectively. These are overestimates of the maximum possible effect, however, because some potentially suicidal youths who are denied access to their chosen means will choose a different means and will still commit suicide. The experts surveyed estimated that programs designed to restrict access to firearms might reduce the number of youth suicides by 4 percent to 23 percent, with an average estimate of about 14 percent and a median of 16 percent (Figure 8). Given the fairly small proportion of suicides caused by medication overdose, the expected impact of an intervention to restrict access to medications is understandably small. The respondents estimated that such a program would decrease suicides by less than 1 percent to about 4.4 percent (Figure 9), with an average of about 3 percent and a median of 2 percent. The respondents estimated that the expected impact of an intervention to restrict access to high places would be a reduction in suicides of less than 1 percent, with the average and median of the answers both less than 1 percent (Figure 11).

The respondents' answers can be examined for patterns; even if there is a wide variation in the estimated impact of each intervention, there might be agreement on the most promising interventions. Unfortunately, this is not the case. For each intervention the respondents ranked the intervention first, second, third, and so forth. The only intervention that appears to receive a high preference from most of the respondents is restricting access to firearms, and the only intervention that clearly receives a low priority is restricting access to high places (Figure 12).

CONCLUSIONS

This study has led to several conclusions. First, there is much uncertainty among acknowledged experts about the expected effectiveness of different proposed interventions--clearly indicated by the wide range of estimates among the experts who responded to the questionnaire. In addition, most of the experts stated that their individual estimates were "soft" or uncertain. Furthermore, many of the experts did not respond because of their own uncertainty and reluctance to have their answers misinterpreted as hard data. If the experts who chose not to respond were even less certain about the impact of the interventions, the actual range of uncertainty might be even greater than that shown in the figures.

Second, none of the interventions are expected to represent a "cure" for youth suicides. The medians of the experts' predictions indicate that each of the interventions would reduce suicides by from less than 1 percent to 16 percent. (A 10% reduction in youth suicides would represent approximately 500 youth suicides prevented each year.) Even if **all** suicide interventions were imposed simultaneously, the expected suicide reduction would be less than 50 percent (their sum) and possibly as low as 15 percent (if the same individuals responded to each intervention).

However, even if none of the interventions could be considered a "cure," some still might be cost-effective public health programs, depending on the costs of the interventions, a factor not examined in this study. Calculating the costs for saving a life through different suicide prevention interventions and comparing those with the costs of other selected health interventions would be useful. For example, in 1981 the Medicare end-stage renal disease program provided kidney dialysis facilities for approximately 64,000 enrollees, at a cost of approximately $23,000 per year of life, the National Heart, Lung, and Blood Institute estimates that between 17,000 and 35,000 victims of end-stage heart disease would benefit from heart transplants each year, at an average cost of about $50,000 per transplant, leading to a median life extension of 5 years. In the absence of available donor hearts, left ventricular assist devices provide about the same life extension at a cost of about $150,000 per recipient. For liver transplantation, the cost per patient surviving 1 year exceeds $230,000 (Task Force on Liver Transplantation in Massachusetts, 1983). At the other end of the spectrum, the cost of adding a year of life through immunization against measles ranges from $480 to $2,100, and the cost of averting a death through oral rehydration therapy can be as low as $100 (Harvey V. Fineberg, personal communication). Screening 30-year-old women every 3 years for cervical cancer delivers a year of life expectancy for approximately $1,000. (Screening annually instead of every 3 years delivers an additional year of life expectancy for approximately $100,000) (David Eddy, unpublished data).

Third, there is no clear "winner" among the proposed interventions. Not only are the averages of all the answers close, but the differences among the averages for each intervention are very small when compared with the range of uncertainty expressed about each intervention. This wide uncertainty about each intervention (represented graphically in the figures) makes it meaningless to attempt finely tuned comparisons among the different interventions, except on the basis of cost. For example, if two interventions are estimated to have approximately the same effect, but one costs 100 times more than the other, clearly the less costly intervention would be preferred.

The experts also varied widely in their choices of the six proposed interventions they believed would be most effective. The experts thought the most effective intervention was to limit access to firearms.

Fourth, most of the information needed to plan effective interventions has not yet been collected or compiled. Thus, the experts cannot accurately select which interventions will be the most effective or cost-effective at this time. Definitive answers cannot be obtained by polling experts or soliciting their opinions. Nor can Congressional hearings or special commissions, which rely on expert opinion, be expected to provide the answers. At this time, arriving at reliable answers will require further research. Perhaps the study's most important conclusion is that a great need exists for additional empirical evidence and for rigorous analysis of the factors that control the effectiveness of different interventions.

RECOMMENDATIONS

Because of the great uncertainty about both the effectiveness and costs of different proposed interventions, it is currently not appropriate to implement any large-scale interventions. Not only is there no rational basis for choosing which interventions would be most effective or efficient, but implementing any large-scale activity could commit resources prematurely to inappropriate interventions and could falsely convey that our information base is stronger than it is.

Rigorous planning is needed before preceeding with interventions. Although the recommendations provided by the Secretary's Task Force on Youth Suicide describe a wide variety of possible large-scale programs, insufficient resources exist to undertake all of these interventions and insufficient data are available to intelligently choose among them.

Because of the social importance and visibility of youth suicide, there might still be great social pressure to undertake **some** activities before adequately assessing which interventions would be most effective. If so, it will be important to recognize the source of the urgency and to design the intervention specifically to address that objective. For example, if increasing public awareness of the problem and demonstrating society's concern are considered important, then interventions should be selected that achieve those objectives. Furthermore, among the possible set of interventions that achieve those objectives, those with the lowest cost should be given priority. Interventions that are expected to have benefits in addition to achieving reduced youth suicide rates should also be emphasized. For example, an intervention designed to prevent youth suicides by supporting families through life crises might not only prevent youth suicides but could prevent other problem behaviors, such as substance abuse and interpersonal violence.

Developing a rational strategy for preventing youth suicides will require that we learn more about the potential effectiveness and costs of each proposed intervention. This knowledge is best obtained through a program of carefully coordinated and directed research.

First, the work introduced in this paper must be expanded. Some expert respondents in our survey have suggested that additional interventions be considered and identified. The evidence about each intervention should be made available to expert panels, and the panelists should discuss the data in the light of their experience to reach a consensus about the factors that determine the effectiveness of each intervention. "Consensus" estimates for the effectiveness of the interventions can then be calculated.

Second, experts can describe the factors that determine the effectiveness of different interventions and identify those factors about which there is greatest uncertainty. Many of those factors could be examined with short-term, low-cost empirical research. For example, with retrospective research, investigators can identify the proportion of youth suicide victims who had been identified as being at high risk for suicide before their deaths. This type of information would greatly improve estimates of the potential impact of interventions designed to improve identification of high-risk youths. If this research showed that all youths who committed suicide had previously been identified as being at high risk, a new intervention designed to increase the identification of high-risk youths would have no additional value. Through research, the proportion of youth suicide victims who were already under medical treatment and the proportion of those who were receiving optimal treatment can be identified. This information would improve estimates of the value of professional education programs. Researchers can identify the proportion of youth suicides that occur in clusters, to help estimate the effectiveness of forming special teams to offer intensive suicide prevention services in high schools where a suicide has occurred. The results of this type of short-term research could then be used to set preliminary priorities and to design pilot programs.

Research is also needed on the costs of various interventions. Some information on program costs already exists, but more cost information is needed. Ongoing and new intervention research should routinely address cost aspects.

Longer term research will eventually be required to evaluate the pilot programs. With this research, information could be collected both on operational characteristics of an intervention (such as the yield of previously unidentified high-risk youths identified through a school-based screening program) and on its long-term effectiveness in actually reducing youth suicides. However, because of the low incidence of suicides, very large sample sizes or large community programs will be required to derive meaningful estimates of the effectiveness of different interventions.

Given the urgency of the youth suicide problem, we recommend a strategy of (1) analyzing the available information; (2) conducting short-term research to gather empirical data for estimating both the effectiveness and costs of different interventions; (3) analyzing the results of that research to set preliminary priorities; (4) designing pilot projects to evaluate the most promising interventions; and (5) evaluating the pilot projects to plan large-scale interventions.

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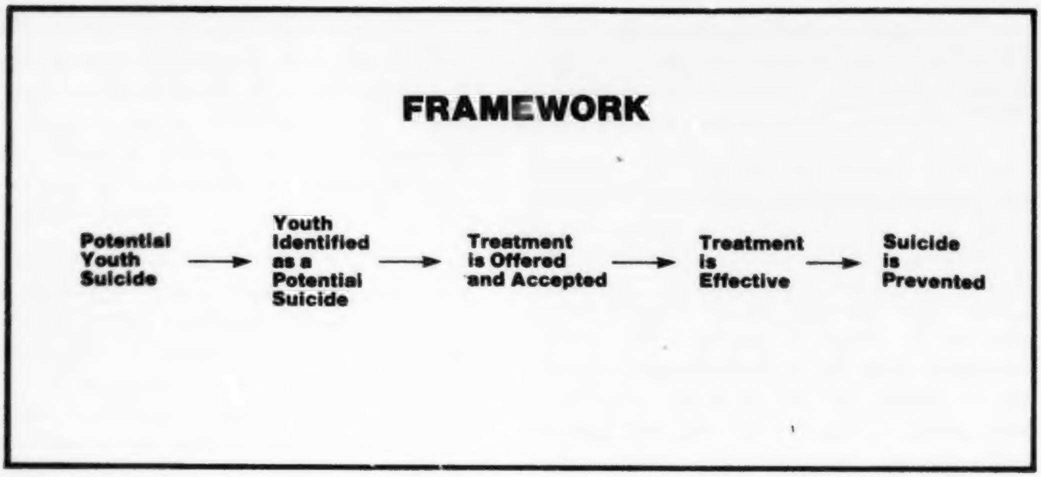
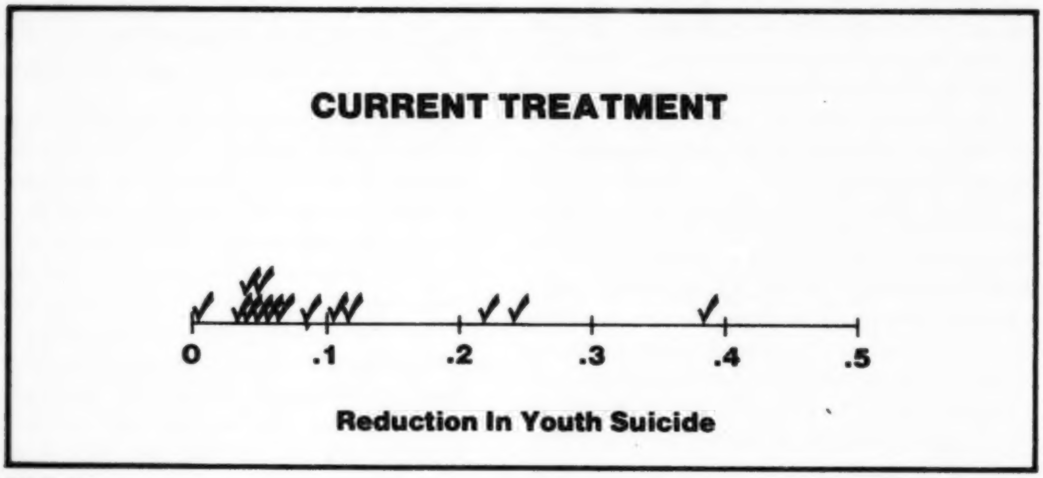

FRAMEWORK
Potential Youth Suicide
Youth Identified as a Potential Suicide
Treatment is Offered and Accepted
Treatment is Effective
Suicide is Prevented

Figure 1.



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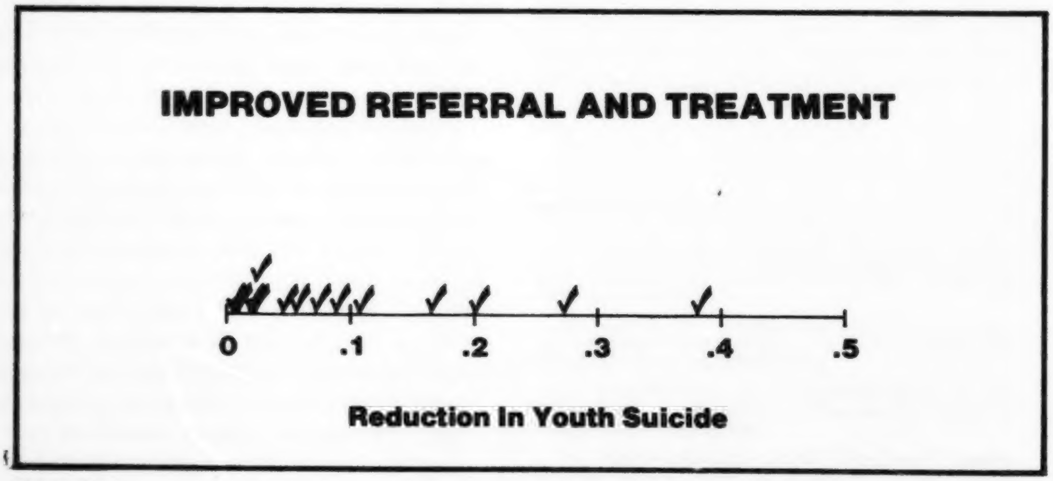

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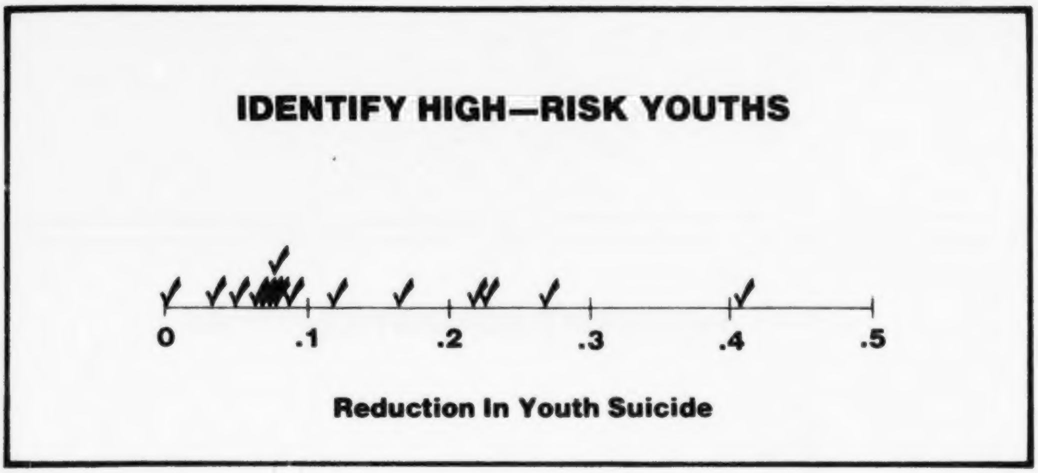

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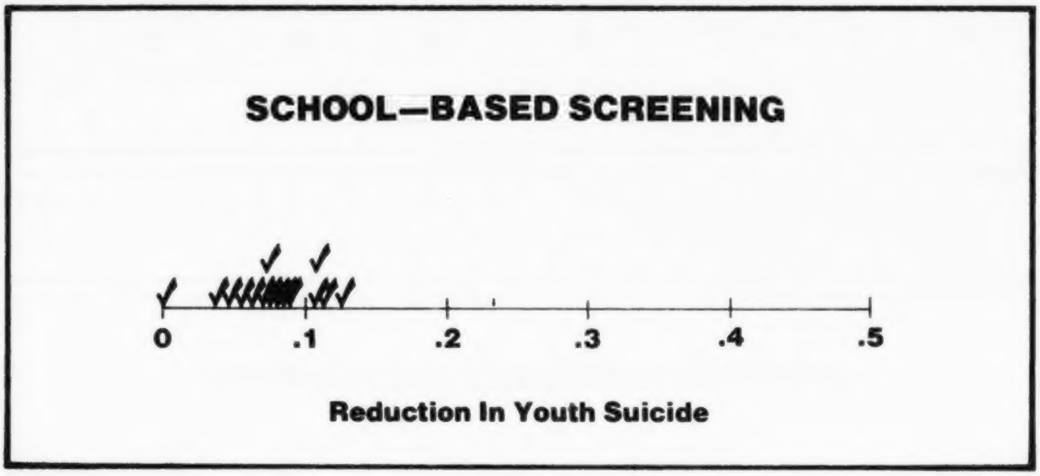

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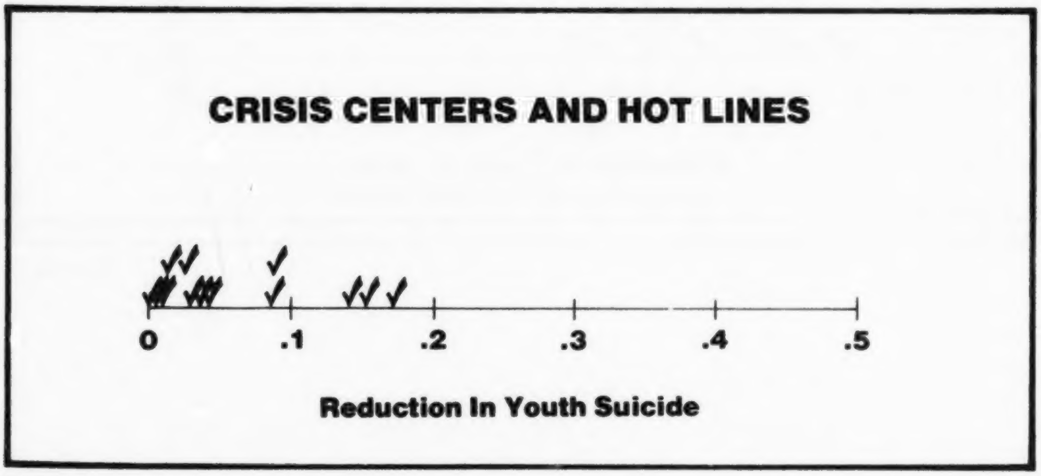

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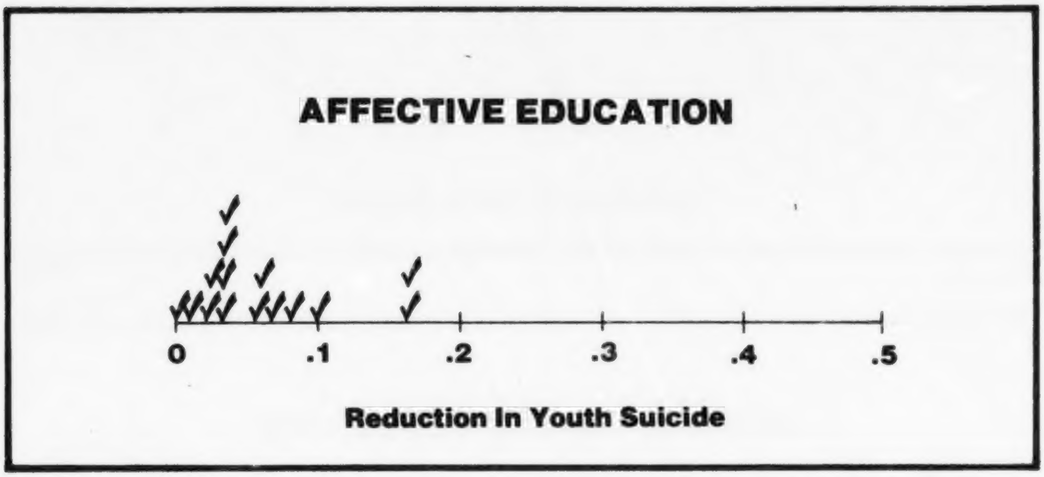

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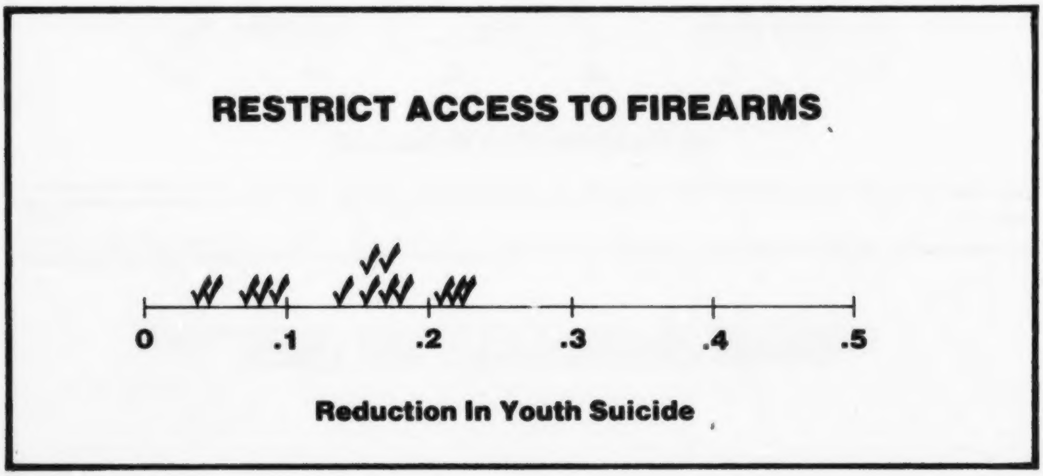

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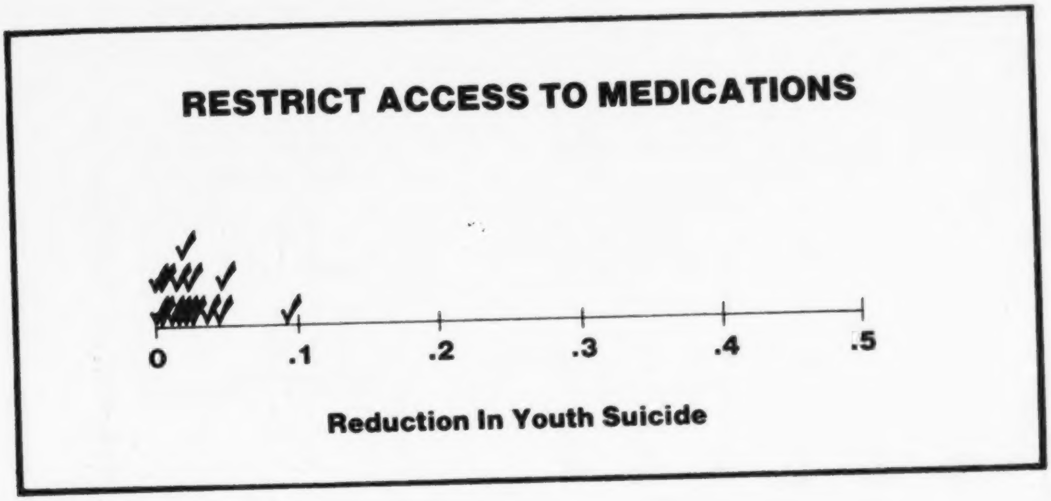

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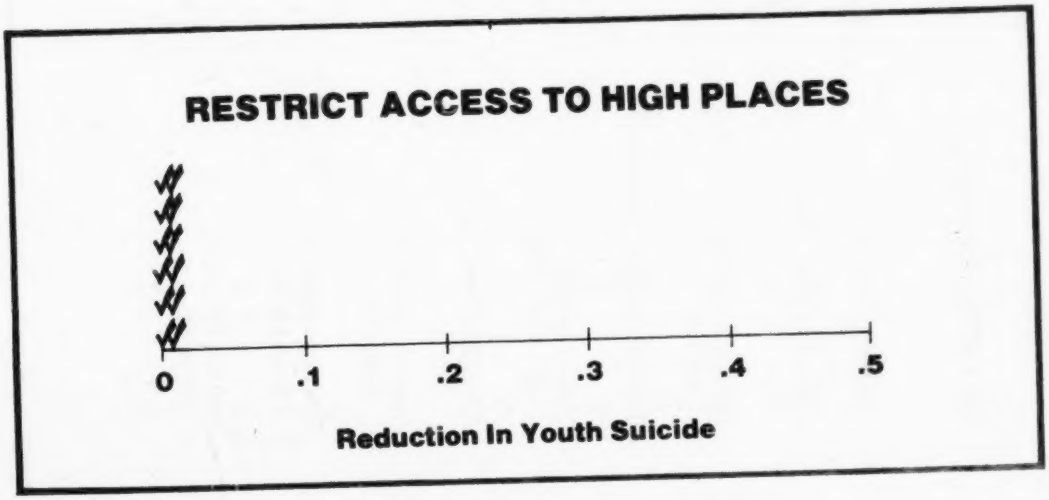

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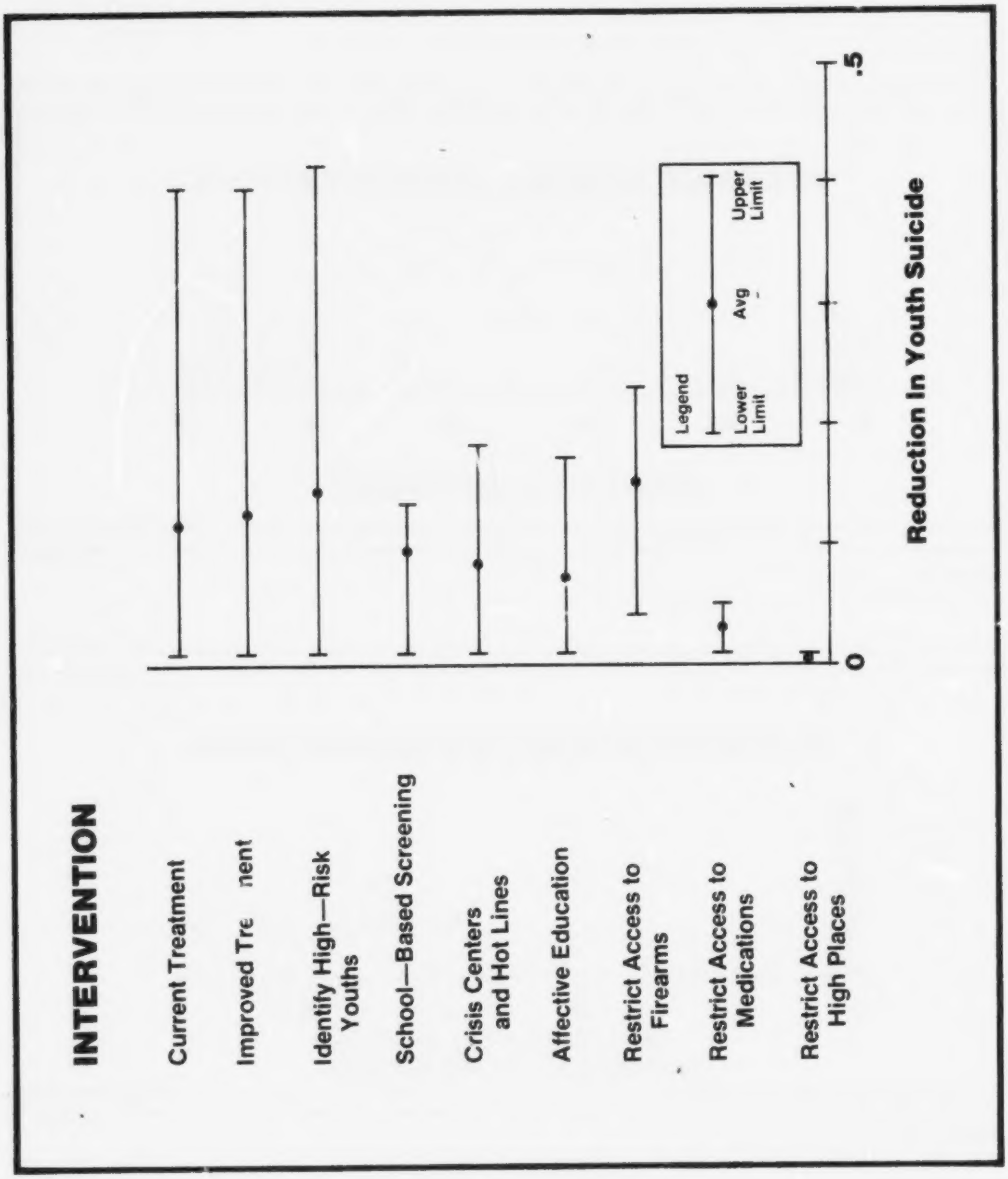
INTERVENTION
Current Treatment
Improved Treatment
Identify High—Risk Youths
School—Based Screening
Crisis Centers and Hot Lines
Affective Education
Restrict Access to Firearms
Restrict Access to Medications
Restrict Access to High Places
Legend
Lower Limit
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Reduction In Youth Suicide

Figure 11.

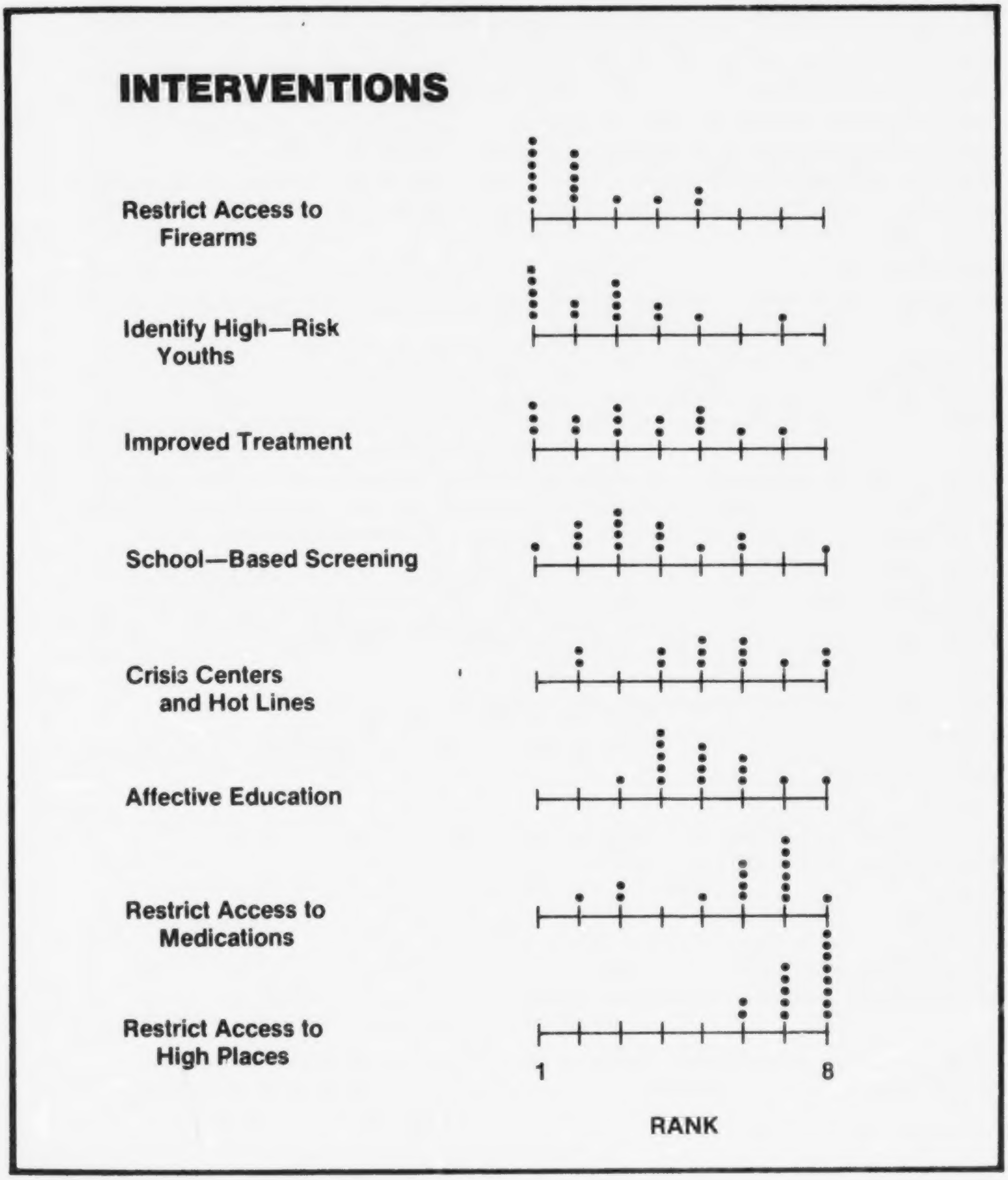
INTERVENTIONS
Restrict Access to Firearms
Identify High—Risk Youths
Improved Treatment
School—Based Screening
Crisis Centers and Hot Lines
Affective Education
Restrict Access to Medications
Restrict Access to High Places
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Figure 12.

APPENDIX A

Definitions of Psychiatric Categories

Depressives: Persons suffering from major depression. Depression here refers to a serious and pervasive mood disturbance marked by despair and an almost complete loss of pleasure in living, and lasting at least 2 weeks. Additional symptoms include sleep disturbances, loss of interest in one's surroundings, guilty ruminations, lack of energy, appetite disturbances, slowing of thoughts and movements, inability to concentrate, and suicidal thoughts (based on DSM III definition). Evidence indicates that this type of depression has a basis in neurophysiological changes and that antidepressant medication or specific forms of psychotherapy can shorten its course and reduce its severity. Many persons with severe depression are not treated by mental health professionals and many of those who are are not appropriately treated with antidepressants or the specific forms of psychotherapy that have been proven effective.

Manic Depressives: These are persons suffering from bipolar disorder, or manic depressive illness (MDI). Persons with this disorder suffer episodes of depression and episodes of feeling excessively "high," energetic, and unstable ("manic").

Many young people with MDI might not be identified as such before they reach middle age. There is no biological marker or test for the illness, and young people with MDI who have not had full-blown manic and depressive episodes might manifest the disorder as excessive impulsiveness and/or aggressiveness. The best clues to MDI among such young people are probably the following: (1) a family history of MDI, and (2) an episodic or cyclical nature of impulsiveness or aggressiveness--the more cyclical the appearance of these traits and the more discrete and delimited the episodes of mood swings, the more likely these are to represent MDI.

Impulsive/Aggressive: Several recent studies suggest that a proportion of youth suicides occur among young people with no affective illness but whose behavior is characterized by a long history of impulsive and aggressive behavior. Frequently such behavior results in the young person's getting into trouble at home, at school, and with the law. This behavior might not differ from the episodes of aggressive/impulsive behavior in children with manic depressive illness, except that it is not episodic and is not a manifestation of a serious affective disorder.

"Normal Risk": These are persons who do not manifest any particular signs or symptoms suggestive of a potential youth suicide.

APPENDIX B

Definitions of Treatment

Three basic levels of treatment that can be delivered by professionals were defined for each type of psychiatric problem. The first level is no treatment. At the other end of the spectrum is optimal treatment. However, even youths who are under professional care do not always receive optimal treatment, and for this reason a third category of treatment, called suboptimal treatment, is identified.

The descriptions of "optimal treatment" and "suboptimal treatment" depend on whether we are talking about depressives, manic depressives, or impulsive/aggressives. Though individual treatment plans may vary and may be tailored to specific circumstances, we provide the following set of generalized definitions.

Depressives

Optimal: Optimal treatment requires that the depressed person be treated with the correct antidepressant (or very specific psychotherapy), in large enough doses, for a long enough period of time to achieve an improvement. Usually psychotherapy (i.e., "talking therapy") alone does not constitute satisfactory treatment, but would be an important part of treatment for most patients. There is recent evidence that two very specific types of psychotherapy (cognitive therapy and interpersonal psychotherapy) might be effective even without medication. For a small proportion of extremely depressed and suicidal persons, hospitalization in a psychiatric hospital would be required. When depression was accompanied by severe agitation or psychotic symptoms (or an inability to recognize reality), antipsychotic medication would be prescribed with the antidepressant medication. For persons with severe cases of depression that did not respond to medication or where the person's life was threatened by starvation or other physiologic complications of depression, electroconvulsive therapy (ECT or "shock therapy") would be used.

A physician as therapist or cotherapist would be required to treat depression with antidepressant medication. The physician could be a psychiatrist, internist, family physician, gynecologist, specialist in adolescent medicine, or other primary care physician.

Suboptimal: Most types of psychotherapy without accompanying antidepressive medication, or with antidepressive medication administered at insufficient dose levels or for an insufficient period constitute suboptimal treatment.

Manic Depressives

Optimal: Lithium (at appropriate levels) either alone or in combination with antidepressants or antipsychotics, with accompanying psychotherapy to detect and treat episodes of depression and mania, is the optimal treatment.

Suboptimal: Psychotherapy or antidepressants without coadministration of lithium and failure to differentiate manic depressive illness from depression or from "personality" or "behavior problems" are considered suboptimal methods.

Impulsive/Aggressives

Optimal: Evaluation by a mental health professional, consultation with parents, and provision of followup counseling during periods of markedly increased stress are optimal methods.

Suboptimal: Meeting with school guidance counselor or disciplinary action by teacher are inadequate.

No treatment is recommended for normal-risk persons.

APPENDIX C

Definition of Interventions

These intervention definitions were formulated to give questionnaire respondents a clearer idea of the type of interventions we were to assess. These interventions are not meant to be ideals, but rather were presented as general models for which the most important characteristics could be clearly described. Because we did not attempt to estimate costs of these interventions, we did not include their associated costs. We recognize, however, that each intervention has significant direct and indirect costs associated with it. Indirect costs include the costs of falsely "labeling" a nonsuicidal youth suicidal, and the potentially harmful effects of some educational programs.

INTERVENTION 1: IMPROVED RECOGNITION AND TREATMENT OF DEPRESSION BY HEALTH CARE PROFESSIONALS

The Intervention

Physicians could be taught about proper treatment of depression and manic depressive illness through a combination of lectures and supervised patient care experiences in medical school and residency training. Physicians who are already in practice could be reached through articles in the medical literature (both scientific and "throw-away" journals) and postgraduate continuing medical education courses. Questions about recognizing and treating depression on medical school and specialty board examinations would create additional incentives for physicians to learn to recognize and properly treat depression. Economic incentives such as increasing the allowable medical insurance charges for treating depression or acute psychological crises, could also lead to improved treatment.

Physicians who did not prescribe appropriate drug treatment for depression (an obstetrician or dermatologist, for example) would have to be taught to refer depressed patients to an appropriate psychiatrist or primary care physician. Nonphysician health care providers (including nurse practitioners, psychiatric social workers, and psychologists) would have to be taught in their professional training, through postgraduate training, and through financial incentives to recognize depression and refer depressed patients for appropriate treatment. Financial incentives to improve the treatment of depression might include health insurance regulations that require evaluation by a physician for any patient with a diagnosis of depression and provisions for complete reimbursement of costs incurred in the appropriate medical treatment of depression.

Target Population

The target population would be health care professionals serving all youths aged 15 to 24 years suffering from major depression or manic depressive illness. Depression occurs during any year (prevalence) in about 1 percent of the population, and manic depressive illness occurs in another 1 percent; we assume these illnesses occur at the same rate among youths aged 15 to 24 years. Thus, in a community of 500,000 (which would include about 95,000 young people in this age group), there would be about 1,000 young people with serious depression and 1,000 with manic depressive illness. About 1.3 of 1,000 normal-risk youths commit suicide during the 10-year period between the ages of 15 and 24 years, but the rate among depressives and manic depressives is believed to be much higher.

Intended Benefits

Benefits of the intervention include lives saved by preventing suicide, improvement in the quality of life of persons treated for depression, improvement in the quality of life of family and friends of depressed individuals, and decreased utilization of medical care services for treating physical symptoms that were indirectly caused by depression. In addition, depressed persons who might otherwise have received inadequate treatment for their depression might actually require fewer mental health services because appropriate treatment would "cure" their depression sooner.

Finally, persons treated quickly and effectively would spend less time in a depressed state and make larger contributions to society in terms of productive work.

INTERVENTION 2: EARLIER IDENTIFICATION OF POTENTIAL YOUTH SUICIDES

The Intervention

Many persons with depression or manic depressive illness (MDI) currently go undiagnosed and, thus, never receive appropriate treatment. This intervention would improve the ability of such individuals to identify themselves as having a serious emotional disorder, the ability of parents to identify their children's disorders, and the ability of "gatekeepers" to better identify these disorders. Gatekeepers are those people who come into contact with depressed persons and who might be able to refer them for appropriate treatment. Gatekeepers include teachers, coaches, priests, and peers.

This program to improve the identification of depression, manic depressive, and other presuicidal indicators would be directed toward parents and gatekeepers. The National Institute of Mental Health is currently implementing such a program called Depression/Awareness, Recognition, and Treatment. This program would attempt to improve parental and public awareness and recognition of presuicidal symptoms through public service announcements on prime time television, articles in the popular press and professional journals, and mailings to professional associations of teachers and other "gatekeepers." Discussions and, possibly, educational programs in public schools would improve the ability of students to identify depression and MDI in their friends and peers.

Target Population

The target population would consist of the parents, teachers, coaches, parole officers, peers, and other persons in a community who have the opportunity to observe youths aged 10 through 24, which would include nearly every citizen.

Intended Benefits

This intervention would result in earlier identification of persons with serious emotional disorders. Combined with a successful treatment intervention, this intervention could result in preventing suicides. In addition, early recognition of these emotional disorders could lead to appropriate treatment, with improvements in the quality of life and increased productivity of persons with these disorders.

INTERVENTION 3: SCREENING SCHOOL-AGED CHILDREN TO DETECT YOUTH AT HIGH RISK FOR SUICIDES

The Intervention

This multistage screening program would attempt to identify students at very high risk of suicide and provide an optimal treatment program for those identified students. The screening program's objective would be to constitute a treatment group containing a large proportion of suicidal youths and a small proportion of nonsuicidal youths.

All children in grades 9-12 would be given Stage 1 of the screen.

Stage 1: One-page, mechanically scannable screening test for risk factors including, among others:

a. impulsivity
b. depression
c. suicide among family members or among friends
d. previous suicide attempts

e. short-time horizon (seeing "the future" as close at hand)

Teachers would not score the tests because their access to student responses might inhibit students' honest responses. Teachers could refer students who they believe are at risk to Stage 2 of the screening program. In addition, all students scoring above a certain threshold on the screening test would be given Stage 2 of the testing program.

Stage 2: Twenty-minute conference with a guidance counselor trained to recognize signs of:

a. anger--repressed or expressed
b. depression
c. alienation

Students designated as "high risk" in this interview would participate in Stage 3.

Stage 3: Sixty-minute session with a trained psychologist or psychiatrist to identify potential youth suicides.

Those students identified as "high risk" in the last stage are given treatment, possibly consisting of a combination of the following:

1. intensive psychotherapy (1 hour/week)
2. family counseling
3. compulsory enrollment in classes intended to help students cope with their special problems

Target Population

High-school-aged children, aged 15 to 18 years, would be the target population. This program would miss students who had dropped out of school; about 24 percent of all entering high school students drop out before graduation. The drop-out rate may be higher among potential youth suicides.

Intended Benefits

This intervention would identify a number of "suicidal" young people and enroll a proportion of them in a treatment program that might save their lives. Nonsuicidal youth with emotional or developmental problems might also be identified by teachers or parents; they might also benefit from early attention in terms of improved quality of life and improved school performance.

INTERVENTION 4: CRISIS CENTERS

The Intervention

In a community with no previous suicide prevention programs, we would introduce a crisis center with a well-publicized "suicide hotline," which would operate 24 hours a day. Personnel at the crisis center would also be able to schedule one or two counseling sessions with individuals in crisis or with family or friends of such individuals. These sessions would be conducted by trained volunteer counselors supervised by mental health professionals. When appropriate, these counselors would refer individuals for followup by mental health professionals in the community. The crisis center would meet the accreditation standards of the American Association of Suicidology.

The crisis center would affect both the identification and treatment of suicidal persons. High-risk persons would be identified by crisis center staff, by callers who were helped to recognize when they are at high risk of suicide, and by family and friends of suicidal persons who were helped by phone to recognize when those persons were at high risk. Treatment would include counseling and support for individuals at risk (by phone or in person), referral to professional treatment or other sources of support in the community, and support for a friend or family at a time of crisis. In addition, the crisis center might have an effect on the community in terms of providing a constant source of hope or help so that potentially suicidal people might feel less hopeless.

Target Population

The target population would be a community of 500,000, with 135,000 youths between the ages of 10 and 24. About 12 suicides would be expected in this population of youths each year, and no other suicide prevention programs would exist in this community.

Intended Benefits

The benefits of the crisis center would include lives saved by preventing suicide among suicidal persons who had contacted the center, lives saved among suicidal persons whose family or friends had contacted the center, and lives saved among suicidal persons who had been dissuaded from committing suicide because they were aware that a caring place (i.e., the crisis center) existed. Additional benefits would include improvements in the quality of life (through identifying and treating ameliorable problems) of troubled individuals and their families. These individuals would include suicidal and nonsuicidal persons. The crisis center could also serve as a resource center for other community mental health workers concerned about suicidal clients.

INTERVENTION 5: AFFECTIVE EDUCATION

The Intervention

High school students in grades 9-12 would participate in a 6-week program (perhaps as part of a course in health education) that met for one class period a day with the goal of teaching them the following:

1. to recognize and identify their feelings
2. to discuss their feelings with friends, parents, and others
3. to ask for help when needed
4. to listen to and identify a friend's call for help (i.e., to develop reflective listening skills)
5. to recognize how and where to get help for oneself and for others

Target Population

High school students, grades 9-12 (ages 15-18) would be targeted. A community of 500,000 would have about 37,000 students in these grades.

Intended Benefits

This course would attempt to improve students' ability to **identify** suicidal feelings in themselves and peers and to **treat** such feelings in themselves and peers. Treatment would occur through talking about their feelings with friends or through making referrals to counselors, parents, or mental health professionals. Some "suicidal" young people would be dissuaded from suicide. An additional benefit of an improved ability to identify and communicate feelings would be an improvement in the student's quality of life.

INTERVENTION 6: RESTRICTING ACCESS TO THE MEANS OF SUICIDE

The Intervention

This intervention would seek to reduce the access of suicidal young people to three lethal means of suicide: handguns, medications, and high places.

1. Handguns. We assume that we could reduce by 50 percent the number of young people to have access to handguns by a legislative package that would include some or all of the following elements:

   a. ban the sale of all firearms to minors
   b. require a 2-week waiting period for purchase of firearms
   c. require licensing and registration for all firearms
   d. screen potential purchasers of firearms for felons or persons with a history of mental illness
   e. require purchase of a locking gun storage box or rack with purchase of firearms
   f. ban the sale of all handguns and confiscate handguns currently in circulation
   g. strictly enforce these regulations at local, State, and national levels

2. Lethal medications. The following precautions could help reduce the number of youth suicides by overdose:
   a. Limit prescriptions for potentially lethal medications (such as antidepressants) to a 7-day supply for a depressed patient. Antidepressant medications are frequently used to commit suicide: they have a very narrow margin of safety between their effective dose and their lethal dose, and they are prescribed for persons who are frequently despondent and suicidal.
   b. Limit the number of pills in a single bottle for other potentially lethal and commonly ingested medications such as acetaminophen (e.g., Tylenol).
3. High places. In New York City, jumping from high places is the leading method of suicide. Making access to such places more difficult by erecting barriers around roofs and along bridges or putting locks on doors might reduce the number of suicidal persons with ready access to such locations by 20 percent.

Target Population

The target population would be all young persons aged 10-24. A community of 500,000 would have about 135,000 youths in this age range.

Intended Benefits

In addition to preventing suicides among young people, each of these interventions would prevent suicides among the 25 and older population.

Some suicide attempts would also be prevented, and benefits include hospital and medical costs saved that otherwise would have been spent to treat these suicide attempts. Some homicides and unintentional injury deaths ("accidents") would also be prevented.

1. Firearms. Unintentional firearm injuries (0.85 fatal and 78 nonfatal injuries per 100,000 people annually) would also be reduced. The rates of homicides and assaults involving firearms (currently about 6.8 per 100,000) as well as firearm use in criminal activities would also be reduced.
2. Medications. A large proportion of suicidal young people are depressed, and many see physicians who prescribe potentially lethal antidepressant medications. Restricting access to medications might prevent some youths from committing suicide by an overdose of antidepressants. Among older persons, a larger number of suicides would be prevented.
3. Jumping. Some potential youth suicide victims who are prevented from jumping will not choose another method and thus their lives will be saved.

QUESTIONNAIRE

The purpose of this questionnaire is to help the Task Force estimate the effectiveness of several different types of interventions in preventing youth suicides. The interventions to be examined include (1) improved identification and treatment of youths with presuicidal conditions (for example, those suffering from depression or manic depressive illness) by health care professionals; (2) earlier identification of potential youth suicides by parents and "gatekeepers" to help identify high-risk youths; (3) school-based screening programs; (4) creation of crisis centers with hotlines; (5) affective education programs for school-aged children; and (6) programs to restrict access to the instruments of suicide (e.g., guns, drugs). The interventions are described more fully in Appendix A: Interventions. As Mark Rosenberg has explained in his cover letter, there are no studies or databases that provide definitive answers to any of these questions. Our task will be to use whatever data do exist, plus your judgments to estimate the effectiveness of the different interventions. These estimates, in turn, should help the task force make preliminary recommendations, and identify targets for more intensive research.

Try to answer every question, even if you are not totally confident about the answer. For those answers about which you are uncertain, you can describe your degree of confidence by stating a range for the answer. For example, if your best guess about the effectiveness of a particular treatment is that it would reduce the chance of suicide by about 60%, but you are highly uncertain, you might answer "60% ± 30%." If you are very certain, you might say "60% ± 5%."

When we put together the answers to the questionnaire we will incorporate your individual degrees of uncertainty, as well as the variability of the answers we receive. If you find the wording or definitions of a particular question to be confusing, with different interpretations leading to significantly different answers, please edit the question so that it describes unambiguously the question you are answering and then answer that question. We will incorporate your answers to the revised question in the analysis. It is important, however, that we know precisely the question that you are answering.

Obviously, you can use any sources of information you want to help answer the question and we encourage you to discuss the questions and answers with knowledgeable colleagues. After all the information has been compiled, we will send you the results of the questionnaire, plus a draft of the analysis based on the questionnaire.

DEFINITIONS

We will define a "potential youth suicide" as a youth who would definitely commit suicide before age 25, if there were no intervention. Thus, with the term "potential youth suicide," we are intentionally **not** including youths who make nonlethal suicidal attempts or gestures, or those youths who appear to be at high risk of suicide but who would not actually commit suicide before age 25 if there were no intervention.

We understand that it is impossible to identify such "potential youth suicides" in advance: only a portion of apparently "high risk" youths will actually commit suicide in the absence of intervention, and some youths will commit suicide who could not be identified as "high risk." It is only those youths who would actually commit suicide that we want to define with the term "potential youth suicide." The term "high risk" will be used to describe youths **who could be identified** as having higher than average probability of actually committing suicide.

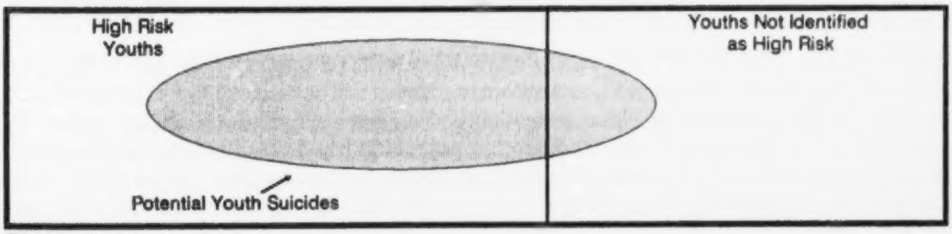

Figure 1.

BASIC FRAMEWORK

This section presents the basic framework we will use in constructing our model to analyze the effectiveness and costs of different interventions. This section also introduces the notational system we use to describe the probabilities of certain outcomes under specified conditions. Some people find the notation helpful, while others find it confusing; the questions will be posed in two forms, both with and without this notation. The basic framework for analyzing the impact of different suicide prevention activities is shown in Figure 2. At the left side, we start with a potential youth suicide. In order to prevent that suicide, the youth must be identified as a potential youth suicide, be offered and accept treatment, and the treatment must be successful in preventing the suicide. The probability that a potential youth suicide actually commits suicide, then, is dependent on the probabilities that affect each of the three main links in this chain.

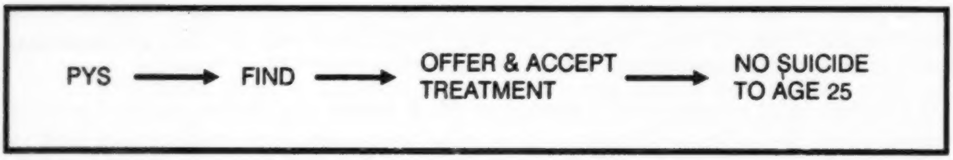

Figure 2.

For example, for the first link we are concerned with the probability that a potential youth suicide will be identified ("found'), which we will designate with the notation:

$$P(\text{find} \mid \text{PYS})$$

where "find" denotes the person is identified, "PYS" denotes potential youth suicide, and the vertical bar "|" is read as "given." Thus, $P(\text{find} \mid \text{PYS})$ is read as "the probability that the person will be identified as a potential youth suicide, given that a person is a potential youth suicide."

For the second link we are concerned with the probability that, if a potential youth suicide is found, he will **be offered and accept** a particular type of treatment, which we will denote as T_1. In symbols, this probability is:

$$P(T_1 \mid \text{found})$$

Finally, for the third link, we need to estimate the probability that a youth will commit suicide, if he is given treatment T_1. The symbol for this is:

$$P(\text{suicide} \mid T_1)$$

Each of the six interventions that we will examine affects one or more of these three probabilities. For example, screening is intended to find potential youth suicides and bring them to treatment. Thus, its purpose is to increase $P(\text{find} \mid \text{PYS})$, and its effect can be described by the change in this probability caused by screening. Education of health professionals, parents, hairdressers, gym teachers, and bartenders ("gatekeepers") is also intended to change the probability that a potential youth suicide will be found.

Treatment interventions are intended to decrease the probability that a youth given treatment will commit suicide. At present, not all youths who are potential youth suicides are offered any treatment, and not all youths under treatment are getting optimal treatment. To analyze this problem, for each of the basic diagnostic categories of potential youth suicides (e.g., depressives, manic depressives), we will describe three basic levels of treatment.

No treatment at all for the particular presuicidal condition will be denoted by the symbol T_0, suboptimal treatment will be denoted T_1, and optimal treatment will be denoted T_2 for the particular condition. Obviously, we would like all potential youth suicides to receive optimal treatment. A possible treatment intervention for reaching that goal could be to educate health care professionals to either refer potential youth suicides to specialists from whom they can receive optimal treatment, or, if a youth is already being seen by a psychiatrist or psychologist, to make certain that the specialist is offering the optimal treatment. The effect of this intervention would be to change the proportion of identified potential youth suicides who receive optimal treatment, that is to increase $P(T_2 \mid \text{found})$.

School-based affective education programs affect this basic framework at two points. One effect is to make both potential youth suicides and their friends more alert to the signs and symptoms characteristic of potential youth suicides. This aspect of an affective education program is intended to increase the probability that a potential youth suicide would be identified and referred for treatment before he commits suicide. Its effect is to increase $P(\text{find} \mid \text{PYS})$, where the potential youth suicide is "found" by himself or a friend.

Another impact of affective education is more direct. By helping potential youth suicides and their friends to be more aware of the suicide problem and the steps that can be taken to correct it, affective education might itself be a form of treatment in the sense that through self-awareness or the intervention of a friend (without referral to a professional), the potential youth suicide will be converted to a nonsuicide.

A crisis center also has several effects. The direct effect is that if a potential youth suicide contacts a crisis center, he or she might be talked out of committing suicide at that time. The person might or might not go on to commit suicide at a later time. A secondary effect of a suicide hotline or crisis center is that a potential youth suicide might not only be prevented from committing suicide at that time, but might also be brought into a treatment program. These effects of the hotline would be registered as changes in $P(\text{find} \mid \text{PYS})$ and $P(T_1 \mid \text{find})$.

Finally, the effect of interventions designed to restrict access to the methods of suicide (e.g., guns, drugs, and high places) can be viewed as another form of treatment. Obviously, it does not treat the underlying condition, but it could prevent the immediate suicidal event by postponing the impulse long enough that the potential youth suicide passes safely through the acute phase and reverts to a nonsuicide.

THE QUESTIONS

The intent of the questions that follow is to determine how each of these interventions affects each of these probabilities. Once this information is obtained, it will be possible to make rough estimates of how each of the interventions affects the number of youths who commit suicide.

Before proceeding with the questions, it is important to point out two more factors that you must keep in mind. First, the interventions will be targeted to specific age groups. In each case, we will state the specific age group that will be the target of the intervention (e.g., age 10 through 24), and your answers should address the particular age group identified for that intervention. We will adjust all the answers to take into account the different age-specific incidence rates.

The second factor is that there are different types of problems or psychiatric conditions that can lead to suicide. In this questionnaire, we will focus on the most important categories, which we will label depressives, manic depressives, and impulsive/aggressives. We also note that some suicides occur in youths who show no signs or symptoms of mental illness or presuicidal behavior and therefore appear to be at "normal risk." Because each of the interventions can affect youths in each of these four diagnostic categories differently, we must break down all of the questions and ask them separately for each category. Thus, when asking questions about a screening program, we will ask separately for the probabilities that a particular screening program will identify depressives, manic depressives, and impulsive/aggressives. In many cases the questions would be irrelevant (and will not be asked) for the "normal risk" group.

Because of this, it is important to note the following definitions of the four categories. They are as follows:

> **Depressives:** These are individuals suffering from major depression. Depression is used here to refer to a serious and pervasive mood disturbance marked by despair and an almost complete loss of pleasure in living, and which lasts at least two weeks. Additional symptoms in-

clude sleep disturbances, loss of interest in one's surroundings, guilty ruminations, lack of energy, appetite disturbances, slowing of one's thoughts and movements, inability to concentrate, and suicidal thoughts (based on DSM III definition). There is clear evidence that this type of depression has a basis in neurophysiological changes and that antidepressant medication or specific forms of psychotherapy can shorten its course and reduce its severity. Many individuals with severe depression never come to the attention of mental health professionals and many of those who do are not appropriately treated with antidepressants or the specific forms of psychotherapy that have been proven effective.

Manic Depressives: There are individuals suffering from bipolar disorder, or manic depressive illness. Individuals with the disorder suffer episodes of depression and episodes of feeling excessively "high," energetic, and unstable ("manic"). In children, manic depressive illness might appear as a cyclical disorder where the child has relatively discrete episodes of acting abnormally aggressive and/or impulsive. A history of depression or manic depressive illness in the family might be an important diagnostic indicator.

Many young people with manic depressive illness (MDI) might not be identified as having this disorder before they reach middle age. There is no biological marker or test for the illness and young people with MDI who have not had full-blown manic and depressive episodes might manifest the disorder as excessive impulsiveness and/or aggressiveness. The best clues to MDI in such young people are probably (1) a history of someone else in their family with MDI; and (2) an episodic nature of these traits of impulsiveness or aggressiveness--the more cyclical the appearance of these traits and the more discrete and delimited the episodes of mood swings, the more likely these are to represent MDI.

Impulsive/Aggressive: Several recent studies suggest that a proportion of youth suicides occur among young people with no affective illness but whose behavior is characterized by a long history of impulsive and aggressive behavior. Frequently such behavior results in the young person's getting into trouble at home, at school and with the law. This behavior might not differ from the episodes of aggressive/impulsive behavior in children with manic depressive illness, except that it is not episodal and is not a manifestation of a serious affective disorder.

"Normal Risk": These are individuals who do not manifest any particular signs or symptoms suggestive of a potential youth suicide.

For brevity, we will sometimes abbreviate the names of these four categories by D, MD, IA, and NR, respectively.

EPIDEMIOLOGY OF POTENTIAL YOUTH SUICIDES

Several facts about the epidemiology of suicide are important. First, it is important to have age-specific incidence rates of suicides. This information is available from the published literature and is shown in Table 1, which gives the incidence rates by five-year age groups for the U.S. in 1980. Annual rates are based on national vital statistics.

Age	U.S. Population	Annual Suicide Rate per 100,000 population
10-14	8.0%	0.78
15-19	9.3%	8.49
20-24	9.4%	16.15
10-24	26.8%	8.86
All ages	100%	11.86

Note: Using 1980 rates, we calculated that about 130 of each 100,000 youths commit suicide in the U.S. before age 25, and about 850 of each 100,000 individuals commit suicide in all. Rates are higher for males, whites, and those living in the west. It should be noted that age-specific suicide rates seem to be changing over time, with a marked increasing trend for youths ages 15-24.

Table 1.

In addition to this, we need to know the approximate proportion of potential youth suicides who come from each of the four main diagnostic categories. That is: given all the youths who would commit suicide (before age 25) in the absence of an intervention (potential youth suicides), what proportion are:

1. Depressives ________%
Manic Depressives ________%
Impulsive/Aggressives ________%
Normal Risk ________%
Total 100 %

To estimate spinoff benefits and costs of different interventions, we also need to know the approximate frequency of each of these diagnostic categories among youth in general. That is, of all youths between the ages of 10 and 24, what proportion are:

2. Depressives ________%
Manic Depressives ________%
Impulsive/Aggressives ________%
Normal Risk ________%
Total 100 %

To simplify the analysis and make it manageable, we will, for each of the diagnostic categories, identify three basic levels of treatment that can be delivered by professionals. The first level will be *No Treatment*, and the symbol T_0 will be used to identify that treatment. At the other end of the spectrum, we will identify *Optimal Treatment*, and use the symbol T_2. We recognize, however, that even youths who are under the care of a professional do not always receive optimal treatment, and for this reason identify a third category of treatment which we will call *Suboptimal Treatment* and use the symbol T_1.

The descriptions of "optimal treatment" and "suboptimal treatment" depend on whether we are talking about depressives, manic depressives, or impulsive/aggressives. Those definitions are as follows:

Depressives

Optimal: Optimal treatment requires that the depressed individual be treated with the correct antidepressant (or very specific psychotherapy), in large enough doses, for a long enough period of time to achieve an improvement. Usually psychotherapy (i.e., "talking therapy") alone does not constitute satisfactory treatment, but would be an important part of treatment for most patients. There is recent evidence that two very specific types of psychotherapy (cognitive therapy and interpersonal psychotherapy) might be effective even without medication. For a small proportion of extremely depressed and suicidal cases, hospitalization in a psychiatric hospital would be required. When depression was accompanied by severe agitation or psychotic symptoms (or an inability to recognize reality), antipsychotic medication would be prescribed with the antidepressant medication. For severe cases of depression that did not respond to medication or where the individual's life was threatened by starvation or other physiologic complications of depression, electroconvulsive therapy (ECT or "shock therapy") would be used.

Treatment of depression with antidepressant medication would require a physician as the therapist or cotherapist. The physician could be a psychiatrist, internist, family physician, gynecologist, specialist in adolescent medicine, or other primary care physician.

Suboptimal: Most types of psychotherapy without accompanying antidepressive medication, or with antidepressive medication administered at insufficient dose levels or for an insufficient period.

Manic Depressives

Optimal: Lithium (at appropriate levels), either alone or in combination with antidepressants or antipsychotics, with accompanying psychotherapy to detect and treat episodes of depression and mania.

Suboptimal: Psychotherapy or antidepressants without coadministration of lithium; failure to differentiate manic depressive illness from depression or from "personality" or "behavior problems."

Impulsive/Aggressives

Optimal: Evaluation by a mental health professional, consultation with parents, and provision of followup counseling during periods of markedly increased stress.

Suboptimal: Meeting with school guidance counselor or disciplinary action by teacher.

No treatment is recommended for normal risk individuals.

For each of the major diagnostic categories, we now need to know the proportions of potential youth suicides in each diagnostic category **who are currently seen by professionals**. We will define a "professional" as a psychiatrist, psychologist, or psychiatric social worker trained to treat these disorders, or as a health care professional (e.g., pediatrician, internist, gynecologist, or non-physician therapist) who is sufficiently knowledgeable about these diagnostic categories to refer a potential youth suicide to an appropriate specialist for a definitive treatment. This leads to the following questions:

3. a. What proportion of potential youth suicides of the **depressive** type (hereinafter denoted by PYS/D) is currently under the care of a professional?

   P(prof care | PYS/D) = ______%

   b. What proportion of potential youth suicides of the **manic depressive** type is currently under the care of a professional?

   P(prof care | PYS/MD) = ______%

   c. What proportion of potential youth suicides of the **impulsive/aggressive** type is currently under the care of a professional?

   P(prof care | PYS/IA) = ______%

   d. What proportion of potential youth suicides of the **normal risk** type is currently under the care of a professional?

   P(prof care | PYS/NR) = ______%

Next, we need to know the proportions of the potential youth suicides of various types that are receiving each of the three levels of treatment. Thus, for depressives:

4. a. Of those potential youth suicides of the **depressive** type who are under the care of health care professionals, what proportion would you estimate are getting no treatment for their presuicidal condition?

   P(T_0 | PYS/D, prof care) ______%

   b. Similarly, estimate the proportion of potential youth suicides of the **depressive** type, seen by professionals, who are receiving suboptimal care:

   P(T_1 | PYS/D, prof care) ______%

   c. Estimate the proportion of potential youth suicides of the **depressive** type, seen by professionals, who are receiving optimal care:

   P(T_2 | PYS/D, prof care) ______%

The answers to the last three questions should add to 100% because there are only three possibilities (no treatment, suboptimal treatment, and optimal treatment).

5. For potential youth suicides of the **manic depressive** type, who are seen by professionals, estimate the proportion who are receiving

a. no treatment: $P(T_0 \mid PYS/MD, \text{prof care}) =$ ______%

b. suboptimal treatment: $P(T_1 \mid PYS/MD, \text{prof care}) =$ ______%

c. optimal treatment: $P(T_2 \mid PYS/MD, \text{prof care}) =$ ______%

6. For potential youth suicides of the **impulsive/aggressive** type, who are seen by professionals, estimate the proportion who are receiving

a. no treatment: $P(T_0 \mid PYS/IA, \text{prof care}) =$ ______%

b. suboptimal treatment: $P(T_1 \mid PYS/IA, \text{prof care}) =$ ______%

c. optimal treatment: $P(T_2 \mid PYS/IA, \text{prof care}) =$ ______%

Finally, we need to know the effectiveness of each of these treatments. Because a potential youth suicide, by definition, will commit suicide in the absence of treatment, we can say that the probability of suicide, given **no** treatment for any of these three categories, is 100%. We will define a successful treatment as a treatment that prevents the youth who would otherwise commit suicide from committing suicide at least through his 24th year. Presumably, suboptimal and optimal treatment will lower the probability of suicide.

7. For potential youth suicides of the **depressive** type, please estimate the chance of suicide before age 25 given

a. optimal treatment: $P(\text{suicide} \mid PYS/D, T_2) =$ ______%

b. suboptimal treatment: $P(\text{suicide} \mid PYS/D, T_1) =$ ______%

8. For potential youth suicides of the **manic depressive** type, please estimate the chance of suicide before age 25 given

a. optimal treatment: $P(\text{suicide} \mid PYS/MD, T_2) =$ ______%

b. suboptimal treatment: $P(\text{suicide} \mid PYS/MD, T_1) =$ ______%

9. For potential youth suicides of the **impulsive/aggressive** type, please estimate the chance of suicide before age 25 given

a. optimal treatment: $P(\text{suicide} \mid PYS/IA, T_2) =$ ______%

b. suboptimal treatment: $P(\text{suicide} \mid PYS/IA, T_1) =$ ______%

Note again that the probability of suicide for a potential youth suicide given no treatment is 100% ($P(\text{suicide} \mid PYS, T_0) = 100\%$) because of our definition of "potential youth suicide."

With your answers to these questions, we can estimate how effective current treatment is in preventing suicides. We can also estimate the potential impact of interventions designed to upgrade treatment.

INTERVENTION 1: IMPROVED RECOGNITION AND TREATMENT OF DEPRESSION BY PROFESSIONALS

This section contains questions designed to estimate the impact of different treatment interventions. For example, a possible recommendation that could be made by the task force is to educate health care professionals so that once a potential youth suicide is seen by a professional, he will receive optimal treatment. (The intervention is described more fully in Appendix A.) To estimate the impact of such an intervention please focus now on potential youth suicides who are under the care of professionals. Imagine that the task force has created a large-scale national program designed to educate health care professionals. Imagine that the task force has created a large-scale national program designed to educate health care professionals about the referral and treatment of potential youth suicides. Such a program would elicit help from professional organizations such as the American Psychiatric Association and the American Psychological Association; produce textbooks to be used in medical schools; introduce special medical school courses in suicide identification, referral and treatment; develop continuing medical education programs on this topic; have questions on suicide identification, referral, and treatment included in Board examinations; develop peer review protocols; and make third-party payment for treatment of depression contingent upon meeting defined treatment standards.

Assume that such programs were in effect. Please estimate how this would change the proportion of potential youth suicides who would receive optimal treatment.

10. First, for **depressives,** please review your answers to Question 4 and re-estimate the proportion of potential youth suicides under professional care who would be offered and accept each of the levels of care, given the presence of an intensive professional education program.

    a. no treatment: $P(T_0 \mid \text{PYS/D, prof care, prof ed prog}) =$ ______%

    b. suboptimal treatment: $P(T_1 \mid \text{PYS/D, prof care, prof ed prog}) =$ ______%

    c. optimal treatment: $P(T_2 \mid \text{PYS/D, prof care, prof ed prog}) =$ ______%

11. For **manic depressives,** please review your answers to Question 5 and re-estimate the new proportions of potential youth suicides who would receive each level of care.

    a. no treatment: $P(T_0 \mid \text{PYS/MD, prof care, prof ed prog}) =$ ______%

    b. suboptimal treatment: $P(T_1 \mid \text{PYS/MD, prof care, prof ed prog}) =$ ______%

    c. optimal treatment: $P(T_2 \mid \text{PYS/MD, prof care, prof ed prog}) =$ ______%

12. For **impulsive/aggressives,** please review your answers to Question 6 and re-estimate the new proportions of potential youth suicides who would receive each level of care.

    a. no treatment: $P(T_0 \mid \text{PYS/IA, prof care, prof ed prog}) =$ ______%

    b. suboptimal treatment: $P(T_1 \mid \text{PYS/IA, prof care, prof ed prog}) =$ ______%

    c. optimal treatment: $P(T_2 \mid \text{PYS/IA, prof care, prof ed prog}) =$ ______%

A second benefit of this proposed intervention would be improved recognition and diagnosis of presuicidal conditions by all health care professionals (including pediatricians, gynecologists, internists, social workers, and others), leading to the referral of potential youth suicides to the appropriate specialists (psychologists, psychiatrists, etc.) for care.

Currently, some of these professionals, when they encounter a potential youth suicide of each diagnostic category, will identify them as needing treatment and will refer them to a specialist. To evaluate interventions designed to increase the identification of potential youth suicides, we must estimate how the existence of an intensive professional educational program would increase the proportion of identified youth suicides.

Thus, we need to estimate the increase or change in the probability that one of these health care professionals would identify and refer for treatment a potential youth suicide of each diagnostic category, **if** that professional encountered such an individual. To answer this, you might picture a potential youth suicide coming into contact with a pediatrician. There is a chance the pediatrician would recognize the suicidal nature of this child and refer him for definitive treatment, and we must estimate how an intensive professional education program would increase that probability. Thus, please estimate:

	Without Prof Ed Program	With Prof Ed Program
13. a. the proportion of potential youth suicides of the **depressive** type who, if seen by a health care professional, would be identified and referred for specific mental health treatment:		
P(referred by prof | PYS/D, seen by prof)	______%	______%
b. the proportion of potential youth suicides of the **manic depressive** type who, if seen by a health care professional, would be identified and referred for specific mental health treatment:		
P(referred by prof | PYS/MD, seen by prof)	______%	______%
c. the proportion of potential youth suicides of the **impulsive/aggressive** type who, if seen by a health care professional, would be identified and referred for specific mental health treatment;		
P(referred by prof | PYS/IA, seen by prof)	______%	______%

INTERVENTION 2: EARLIER IDENTIFICATION OF POTENTIAL YOUTH SUICIDES

One of the deficiencies of our current "system" for preventing youth suicide is that we do not identify potential youth suicides at all or as quickly as we might, and therefore, do not refer them to treatment as early as possible. To help correct this problem, we will identify three main groups of people who could "spot" or identify potential youth suicides: health care professionals, parents, and "gatekeepers" (described below). We have already considered the possible effects of a program intended to educate health care professionals to the symptoms and treatments of potential youth suicides. This section deals with interventions designed to help parents and gatekeepers improve their ability to spot potential youth suicides and refer them for treatment.

Parents. It might be possible to help parents become more alert to the signs and symptoms of depression, manic depressive illness, and impulsive/aggressive disorders that might indicate a potential youth suicide. This would increase the probability that a potential youth suicide will be spotted as such by his parents and referred to a professional. Interventions that might accomplish this would be an intensive campaign of public service announcements and informational programs on television and radio; coordinated presentations at parent-teacher association meetings; pamphlets delivered through the school system or mail; and newspaper stories, magazine articles, op-ed pieces, and so forth.

To answer the next set of questions, please focus only on those potential youth suicides who are **not** already being seen by a professional. At present, by definition, the parents who are the targets of this intervention are **not** identifying the signs and symptoms of potential youth suicides and are **not** referring their children to a professional; at present for these parents the probability of identification and referral is zero. We are interested in how an intensive parent education program will increase the probability that a potential youth suicide will be identified by a parent and referred for professional help. Thus, please estimate:

	Without Program	With Program
14. a. the probability that a potential youth suicide of the **depressive** type who is currently not recognized or referred for help will be identified and referred by a parent for help:		
P(referred by parents | PYS/D)	0 %	___%
b. the probability that a potential youth suicide of the **manic depressive** type who is currently not recognized or referred for help will be identified and referred by a parent for help:		
P(referred by parents | PYS/MD)	0 %	___%
c. the probability that a potential youth suicide of the **impulsive/aggressive** type who is currently not recognized or referred for help will be identified and referred by a parent for help:		
P(referred by parents | PYS/IA)	0 %	___%

Gatekeepers. Another category of people who could help spot potential youth suicides includes teachers, barbers, beauticians, bartenders, gym teachers, religious counselors, neighbors, relatives, and other adults who are neither parents of the potential youth suicide victim nor health care professionals. In some cases students could also be trained to identify their peers at high risk of suicide. As with the previous set of questions we are concerned here with potential youth suicides who are not currently being seen by professionals; our intention is to alert these "gatekeepers" to the signs and symptoms of potential youth suicide, so that they will refer the potential youth suicides for professional care. When estimating the impact of this intervention, keep in mind that achieving a referral by this route might well require several steps. First, the gatekeeper must spot the potential youth suicide; then the gatekeeper must inform either the individual or the parents of the individual; and third, either the gatekeeper, the individual, or the individual's parents must successfully refer the individual to a professional.

Specific interventions that might be used to increase the awareness of "gatekeepers" to the signs and symptoms of potential youth suicides include public service announcements on prime time television and radio, articles in the popular press and professional journals, mailings to the professional associations of teachers and other gatekeepers, and attention to these disorders in the professional education programs of all potential gatekeepers. In addition, educational programs for students in the schools would improve their ability to identify and refer their peers at high risk of suicide.

Assuming that such an intensive "gatekeeper education program" were put into effect, how would such a program change the chance that a gatekeeper would cause an otherwise unspotted potential youth suicide to be referred for professional care? Please estimate:

Without Program — With Program

15. a. the probability that a potential youth suicide of the **depressive** type who is currently not recognized or referred for help will be identified and referred by a gatekeeper for help:

P(referred by gatekeeper | PYS/D) — 0 % — ____%

b. the probability that a potential youth suicide of the **manic depressive** type who is currently not recognized or referred for help will be identified and referred by a gatekeeper for help:

P(referred by gatekeeper | PYS/MD) — 0 % — ____%

c. the probability that a potential youth suicide of the **impulsive/aggressive** type who is currently not recognized or referred for help will be identified and referred by a gatekeeper for help:

P(referred by gatekeeper | PYS/IA) — 0 % — ____%

INTERVENTION 3: SCREENING SCHOOL-AGE CHILDREN

The third major set of interventions involves screening youths in high school to try to identify depressives, manic depressives, and impulsive/aggressives, and refer them to professionals for further evaluation and treatment. The screening intervention we envision consists of three stages. In the first stage, a one-page, machine-scorable questionnaire will be given to all students in all grades of high school. The questions will be designed to help identify high-risk youths from all three diagnostic categories: depressives, manic depressives, and impulsive/aggressives. It is likely that this questionnaire will be so general that it will erroneously identify a large proportion of children, most of whom are not potential youth suicides (these are called "false positives"). Thus, a second screen would be necessary for all the children who have a positive response to the first screen. This second screen will consist of a 20-minute consultation with a guidance counselor or social worker specially trained to identify the signs and symptoms of a potential youth suicide. Individuals who are still thought to be potential youth suicides would then be referred for a third screen by a specialist (psychologist or psychiatrist). This examination would take about one hour and should successfully identify youths who truly need treatment. The intervention is described more fully in Appendix A. One feature of the screening program that must be taken into account is that it will undoubtedly identify many youths who have signs of depression, manic depression, or impulsive/aggression and need treatment, but who are not in fact potential youth suicides (i.e., they would not actually commit suicide in the absence of an intervention). This is both a benefit and cost of the screening program. It is a benefit in that it brings these individuals to treatment, which we assume to be beneficial. It is a cost in that the treatment will cost money. These benefits and costs must be estimated, and will be addressed below. For now, let us focus on the effectiveness of this screening program in reducing potential youth suicides. That is, focus on the "potential youth suicides," those individuals who would commit suicide in the absence of any intervention, who are not already under the care of a professional.

In order to estimate the effectiveness of this screening program, we must estimate the sensitivity and specificity of the three different screening levels. For convenience, we will use the symbols S_1, S_2, and S_3 to identify the three screening levels as described above, and will use the superscripts plus $(^+)$ or minus $(^-)$to denote whether or not a particular screening test (S_1, S_2, or S_3) indicates that an individual has signs or symptoms suggestive of potential youth suicide (e.g., depression, manic depression). The flow chart described in Figure 3 will help you understand how the three levels of tests relate to one another, and how they concentrate the youths into smaller and smaller subsets containing a higher and higher fraction of potential youth suicides. For this figure, we have used totally hypothetical numbers to illustrate how the calculations will be performed.

Our task in this questionnaire is to get your best estimates of the probabilities that describe the performance or accuracy of these three levels of screening tests. Because the screening tests might have different accuracies in detecting the three basic types of diagnostic categories for potential youth suicides (depressive, manic depressive, and impulsive/aggressive), the accuracies must be estimated separately for each type.

16. a. For **depressives**, estimate the probability that the first screening test will be positive, given that it is administered to a potential youth suicide of the depressive type who has not yet been identified (i.e., is not under the care of a professional).

    $P(S_1^+ \mid PYS/D) =$ ____%

    b. Now focus on youths who have a positive result on the first screening level, what proportion of them will be positive on the second level?

    $P(S_2^+ \mid PYS/D, S,^+) =$ ____%

    c. Finally, we need the sensitivity of the third level of the screening program. Given that a potential youth suicide of the depressive type has been picked up (positive) by the first and second levels of the screening test, please estimate the chance he or she will be positive on the third level.

    $(S_3^+ \mid PYS/D_1S_1^+, S_2^+) =$ ____%

The preceding three questions pertain to potential youth suicides of the depressive type. Now we must focus on potential youth suicides of the manic depressive type who, again, have not yet been identified and are not yet under the care of professionals.

17. a. For **manic depressives,** estimate the probability that the first screening test will be positive, given that it is administered to a potential youth suicide of the manic depressive type who has not yet been identified (i.e., is not under the care of a professional).

    $P(S_1^+ \mid PYS/MD) =$ ____%

    b. What proportion of manic depressive youths who have a positive result on the first screening level will be positive on the second level?

    $P(S_2^+ \mid PYS/MD, S_1^+) =$ ____%

    c. Given that a potential youth suicide of the manic depressive type has been picked up (positive) by the first and second levels of the screening test, estimate the chance he or she will be positive on the third level.

    $P(S_3^+ \mid PYS/MD, S_1^+, S_1^+) =$ ____%

Finally, we must ask these questions for potential youth suicides of the impulsive/aggressive type.

18. a. For **impulsive/aggressives,** estimate the probability that the first screening test will be positive, given that it is administered to a potential youth suicide of the impulsive/aggressive type who has not yet been identified (i.e., is not under the care of a professional).

    $P(S_1^+ \mid PYS/IA) =$ ____%

    b. What proportion of impulsive/aggressive youths who have a positive result on the first screening level will be positive on the second level?

    $P(S_2^+ \mid PYS/IA, S_1^+) =$ ____%

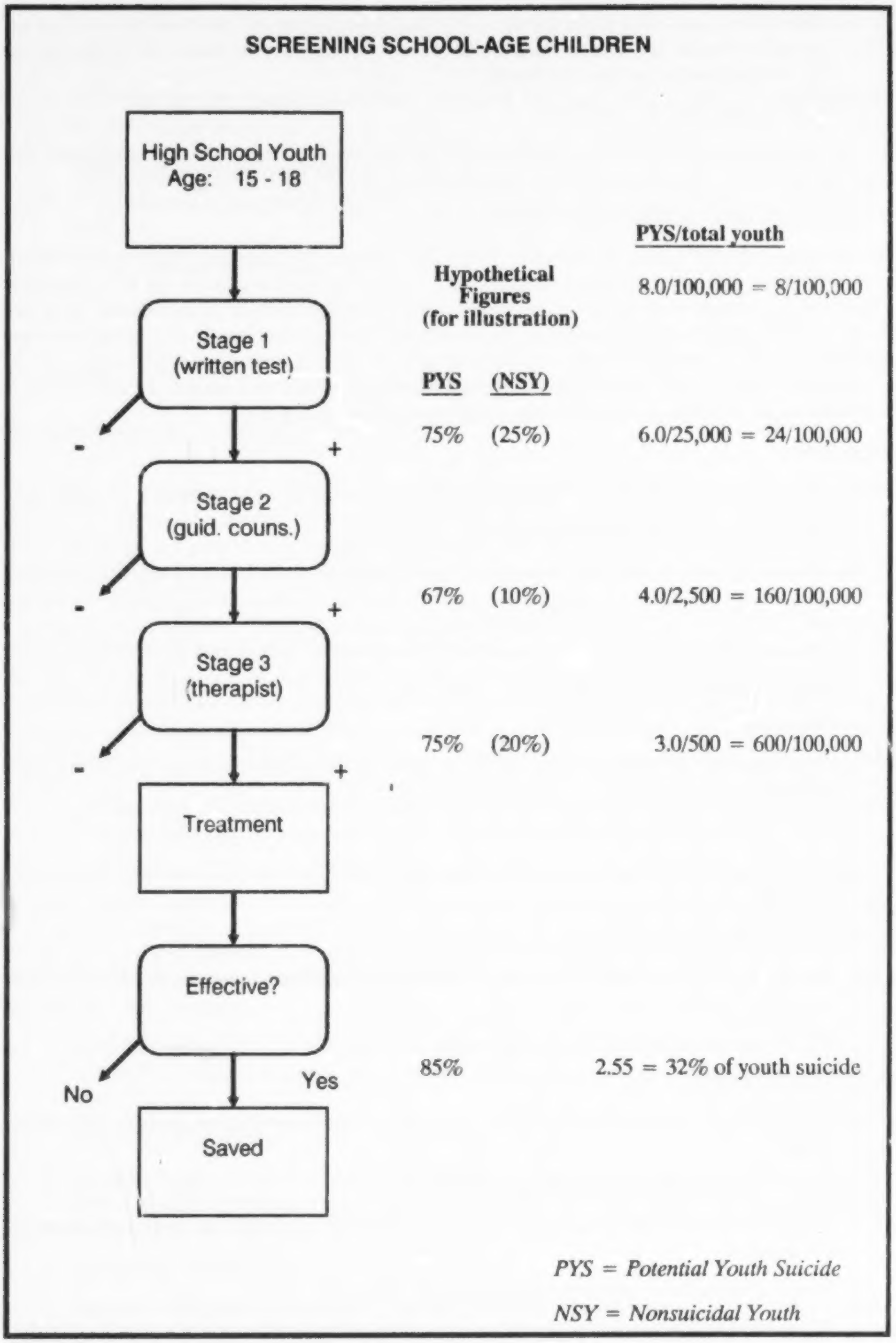
SCREENING SCHOOL-AGE CHILDREN
High School Youth
Age: 15 - 18
Stage 1
(written test)
Stage 2
(guid. couns.)
Stage 3
(therapist)
Treatment
Effective?
Saved
-
+
No
Yes
Hypothetical Figures (for illustration)
PYS
(NSY)
75%
(25%)
67%
(10%)
75%
(20%)
85%
PYS/total youth
8.0/100,000 = 8/100,000
6.0/25,000 = 24/100,000
4.0/2,500 = 160/100,000
3.0/500 = 600/100,000
2.55 = 32% of youth suicide
PYS = Potential Youth Suicide
NSY = Nonsuicidal Youth

Figure 3.

c. Given that a potential youth suicide of the impulsive/aggressive type has been picked up (positive) by the first and second levels of the screening test, estimate the chance he or she will be positive on the third level.

$P(S_3^+ \mid PYS/IA, S_1^+, S_2^+) =$ ____%

If you are not able to break down these answers by diagnostic category, then you can give the same answers above for each category of potential suicides (PS/D, PS/MD, and PS/IA).

"FALSE-POSITIVE" SCREENING TESTS

Screening will also find some depressives, manic depressives, impulsive/aggressives, and others who are not actually potential youth suicides in the sense that they would not definitely commit suicide in the absence of an intervention. The screening program will identify some of these individuals and cause them to be referred for treatment. This has the benefit of treating these individuals, but also generates cost. To estimate the number of such nonsuicidal depressives, nonsuicidal manic depressives, nonsuicidal impulsive/aggressives, and others, we can estimate the following probabilities for each of the three levels of screening tests.

Depressives:

19. a. What percent of nonsuicidal depressives will be positive on the first level of the screen?

$P(S_1^+ \mid \text{nonsuicidal depressives}) =$ ____%

b. What percent of nonsuicidal depressives will be positive on the second level of the screen?

$P(S_2^+ \mid \text{nonsuicidal depressives}, S_1^+) =$ ____%

c. What percent of nonsuicidal depressives will be positive on the third level of the screen?

$P(S_3^+ \mid \text{nonsuicidal depressives}, S_1^+, S_2^+) =$ ____%

Manic Depressives:

20. a. What percent of nonsuicidal manic depressives will be positive on the first level of the screen?

$P(S_1^+ \mid \text{nonsuicidal manic depressives}) =$ ____%

b. What percent of nonsuicidal manic depressives will be positive on the second level of the screen?

$P(S_2^+ \mid \text{nonsuicidal manic depressives}, S_1^+) =$ ____%

c. What percent of nonsuicidal manic depressives will be positive on the third level of the screen?

$P(S_3^+ \mid \text{nonsuicidal manic depressives}, S_1^+, S_2^+) =$ ____%

Impulsive/Aggressives:

21. a. What percent of nonsuicidal impulsive/aggressives will be positive on the first level of the screen?

$P(S_1^+ \mid \text{nonsuicidal impulsive/aggressives}) =$ ____%

b. What percent of nonsuicidal impulsive/aggressives will be positive on the second level of the screen?

$P(S_2^+ \mid \text{nonsuicidal impulsive/aggressives}, S_1^+) =$ ____%

c. What percent of nonsuicidal impulsive/aggressives will be positive on the third level of the screen?

$P(S_3^+ \mid \text{nonsuicidal impulsive/aggressives}, S_1^+, S_2^+) =$ ____%

Normal Risk:

22. a. What percent of nonsuicidal normal risk youth will be positive on the first level of the screen?

$P(S_1^+ \mid \text{nonsuicidal normal risk}) =$ ____%

b. What percent of nonsuicidal normal risk youth will be positive on the second level of the screen?

$P(S_2^+ \mid \text{nonsuicidal normal risk}, S_1^+) =$ ____%

c. What percent of nonsuicidal normal risk youth will be positive on the third level of the screen?

$P(S_3^+ \mid \text{nonsuicidal normal risk}, S_1^+, S_2^+) =$ ____%

INTERVENTION 4: CRISIS CENTERS

One of the most prominent antisuicide interventions currently used is the crisis center with a hotline. An intervention introducing such a crisis center into a community is described in Appendix A. In order for such a crisis center to be effective in reducing youth suicides, several things must occur. First, a potentially suicidal youth must be aware of the hotline and able to locate the telephone number in a time of crisis. Second, the suicidal youth must be inclined to call such a hotline in a time of crisis. Third, if the potential youth suicide makes contact with the crisis center, then to be effective the crisis center must actually persuade the suicide victim to not commit suicide. When this occurs, at the very least, an immediate suicide will have been deterred. Finally, in order for the crisis center to **prevent** the youth suicide rather than just **defer** it, it must "cure" the potential youth suicide by helping him past a unique crisis (and into a period free of future suicide crises) or by bringing him into a successful treatment program that helps him cope with future crises. The flow chart depicted in Figure 4 may help to clarify this progression. The crisis center can also help a family member or friend of the troubled youth learn how to refer the youth to an appropriate treatment program.

We will ask some of the following questions separately for each of the four diagnostic categories of potential youth suicides. In addition, in order to help assess costs and spinoff benefits, we will also ask questions for nonsuicidal youths who might call the crisis center out of loneliness, desperation, or curiosity. We will abbreviate nonsuicidal youth by NSY. If you do not feel that youth of the various categories differ for one or more of the questions, feel free to enter the same number for each category.

23. a. Of those potential youth suicides of the **depressed** type, what proportion would be aware of a well-publicized suicide hotline and would be able to find the telephone number in a time of crisis?

P(access | PYS/D) = ____%

b. Of those potential youth suicides of the **manic depressive** type, what proportion would be aware of a well-publicized suicide hotline and would be able to find the telephone number in a time of crisis?

P(access | PYS/MD) = ____%

c. Of those potential youth suicides of the **impulsive/aggressive** type, what proportion would be aware of a well-publicized suicide hotline and would be able to find the telephone number in a time of crisis?

P(access | PYS/IA) = ____%

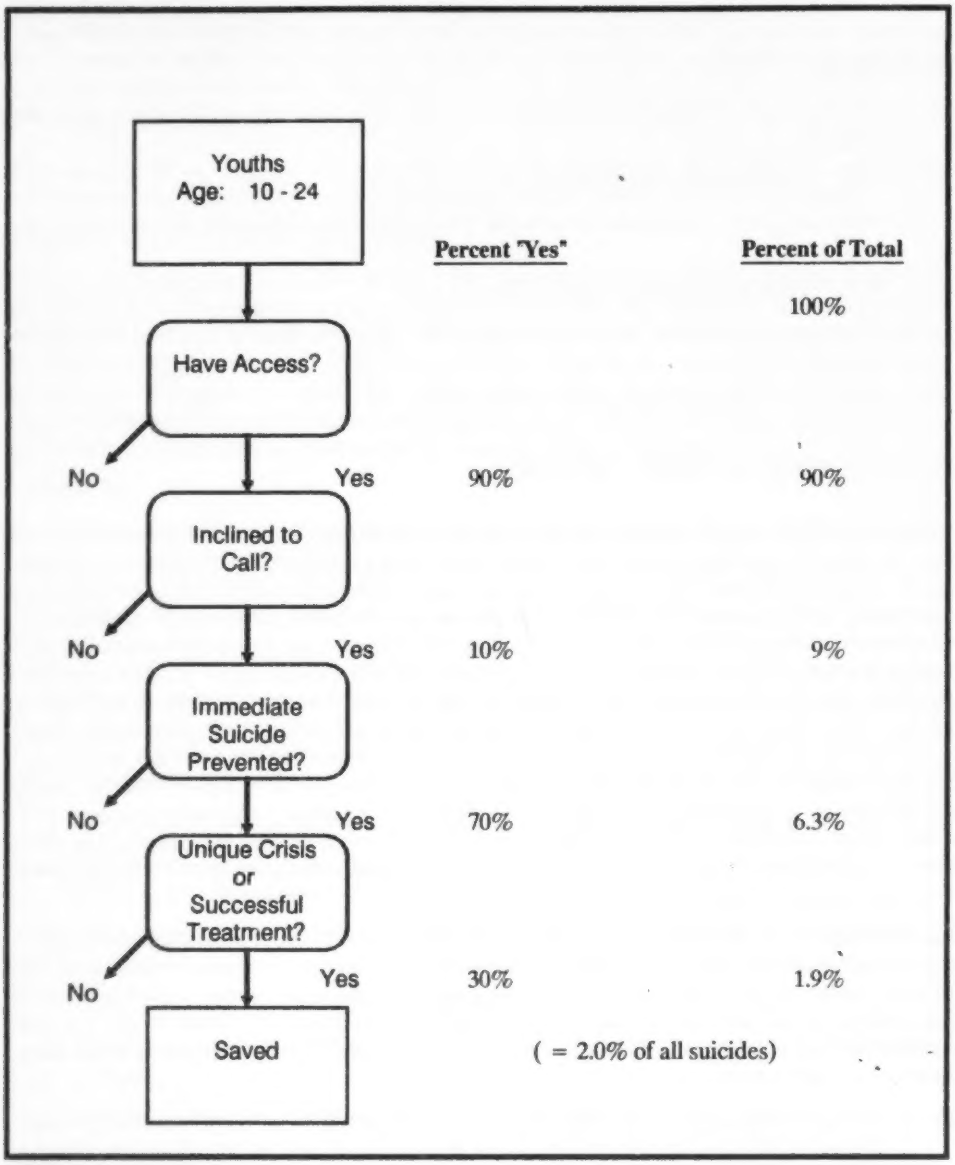
Youths
Age: 10 - 24
Percent "Yes"
Percent of Total
100%
Have Access?
No
Yes
90%
90%
Inclined to Call?
No
Yes
10%
9%
Immediate Suicide Prevented?
No
Yes
70%
6.3%
Unique Crisis or Successful Treatment?
No
Yes
30%
1.9%
Saved
(= 2.0% of all suicides)

Figure 4.

d. Of those potential youth suicides of the **normal risk** type, what proportion would be aware of a well-publicized suicide hotline and would be able to find the telephone number in a time of crisis?

P(access | PYS/NR) = ____%

e. Of those youths who are not potential youth suicides, what proportion would be aware of a well-publicized suicide hotline and would be able to find the telephone number in a time of crisis?

P(access | PYS/NSY) = ____%

24. a. Of those potential youth suicides of the **depressed** type who are aware of how to reach a suicide hotline, what proportion would call in a time of crisis?

P(call | PYS/D, access) = ____%

b. Of those potential youth suicides of the **manic depressive** type who are aware of how to reach a suicide hotline, what proportion would call in a time of crisis?

P(call | PYS/MD, access) = ____%

c. Of those potential youth suicides of the **impulsive/aggressive** type who are aware of how to reach a suicide hotline, what proportion would call in a time of crisis?

P(call | PYS/IA, access) = ____%

d. Of those potential youth suicides of the **normal risk** type who are aware of how to reach a suicide hotline, what proportion would call in a time of crisis?

P(call | PYS/NR, access) = ____%

e. Of those youths who are not potential youth suicides and who are aware of how to reach a suicide hotline, what proportion would call in a time of crisis?

P(call | PYS/NSY, access) = ____%

25. a. Of those potential youth suicides of the **depressed** type who call a suicide hotline in a time of crisis, what proportion will survive the immediate crisis?

P(immediate survival | PYS/D, call) = ____%

b. Of those potential youth suicides of the **manic depressive** type who call a suicide hotline in a time of crisis, what proportion will survive the immediate crisis?

P(immediate survival | PYS/MD, call) = ____%

c. Of those potential youth suicides of the **impulsive/aggressive** type who call a suicide hotline in a time of crisis, what proportion will survive the immediate crisis.

P(immediate survival | PYS/IA, call) = ____%

d. Of those potential youth suicides of the **normal risk** type who call a suicide hotline in a time of crisis, what proportion will survive the immediate crisis?

P(immediate survival | PYS/NR, call) = ____%

Some potential youth suicides who survive a crisis will be "cured," that is, will survive to age 25, while others will go on to commit suicide at a later date. The crisis center could contribute to such a cure either by helping the potential youth suicide to survive a unique crisis brought on by an especially traumatic experience unlikely to be repeated, or by helping to bring him into a successful treatment program. You might wish to consider separately the likelihood that potential youth suicides of each of the four diagnostic categories might be cured in this fashion.

26. a. Of those potential youth suicides of the **depressed** type who survive a time of crisis by calling the hotline, what proportion will survive to age 25 as a result of the call?

    P(cured | PYS/D, call, survive crisis) = ____%

    b. Of those potential youth suicides of the **manic depressive** type who survive a time of crisis by calling the hotline, what proportion will survive to age 25 as a result of the call?

    P(cured | PYS/MD, call, survive crisis) = ____%

    c. Of those potential youth suicides of the **impulsive/aggressive** type who survive a time of crisis by calling the hotline, what proportion will survive to age 25 as a result of the call?

    P(cured | PYS/IA, call, survive crisis) = ____%

    d. Of those potential youth suicides of the **normal risk** type who survive a time of crisis by calling the hotline, what proportion will survive to age 25 as a result of the call?

    P(cured | PYS/NR, call, survive crisis) = ____%

27. a. Some troubled but nonsuicidal youths might also call the crisis center, and some of those will be brought into treatment. What proportion of the calls received by a crisis center hotline would be by nonsuicidal youths?

    P(NSY call | call by PYS or NSY) = ____%

    b. What proportion of nonsuicidal youths who call would be brought into a treatment program?

    P(treatment | NSY, call) = ____%

INTERVENTION 5: AFFECTIVE EDUCATION

The fifth set of interventions is affective education. These are educational programs designed for school children to help them "get in touch with their feelings," to understand better the types of problems that could lead to suicide, to learn the signs and symptoms that could indicate serious psychological problems, and to understand how they might receive help. These programs would also educate the friends of potential youth suicides about the signs and symptoms of suicide, and help them understand how they might be able to either treat or get help for their friends.

The specific interventions that might be designed to conduct affective education in high schools, are described in Appendix A. To estimate the effect of these interventions, we must again focus on potential youth suicides who are not yet in treatment, and who are not yet spotted by parents, adults, or gatekeepers for referral to treatment. As just indicated, affective education can decrease suicides in two main ways. First, the affective education itself might be sufficient to help an individual treat himself–recover from an acute suicide crisis and permanently keep himself out of danger of actually committing suicide. Affective education could also help treat a potential youth suicide through a friend; it could educate a friend about not only the signs and symptoms of suicide but about steps that could be taken by friends to help a potential youth suicide victim avoid suicide. The second main way affective education could decrease suicides is to cause either potential youth suicides or their friends to refer the potential youth suicide to a professional for definitive treatment. Let us first focus on the "treatment" effect of affective education. The "referral" effect of affective education will be discussed later.

Focusing now on the impact of affective education in either helping suicide victims treat themselves, or helping the friends of suicide victims to treat their friends, we need to estimate how the existence of an affective education program would change the probability of suicide in a potential youth suicide victim by either of these treatment routes. Recall that, by definition, a potential youth suicide will commit suicide (with 100% probability) in the absence of intervention. Thus, we are concerned here with how the affective education program will change that probability by decreasing it to a number below 100%. Thus, for each of the four major categories of

suicide (depressive, manic depressive, impulsive/aggressive, normal risk), please estimate the proportion of potential youth suicides who would still commit suicide if the affective education were put in place:

Without Program / With Program

28. a. What proportion of potential youth suicides of the **depressive** type would commit suicide?

    P(suicide | PYS/D) = 100 % ____%

  b. What proportion of potential youth suicides of the **manic depressive** type would commit suicide?

    P(suicide | PYS/MD) = 100 % ____%

  c. What proportion of potential youth suicides of the **impulsive/aggressive** type would commit suicide?

    P(suicide | PYS/IA) = 100 % ____%

  d. What proportion of potential youth suicides of apparently **normal risk** would commit suicide?

    P(suicide | PYS/NR) = 100 % ____%

The other possible effect of an affective education program is that it can cause either a potential youth suicide or his friend to refer the potential youth suicide for treatment. Again, these programs will only be of help to potential youth suicides who are not already under the care of a professional. Therefore, focusing on potential youth suicides who have not yet been identified and referred for treatment, please estimate:

Without Program / With Program

29. a. With an affective education program, what percent of potential youth suicides of **depressive** type would be successfully referred?

    P(successful referral | PYS/D) = 0 ____%

  b. With an affective education program, what percent of potential youth suicides of the **manic** depressive type would be successfully referred?

    P(successful referral | PYS/MD) = 0 ____%

  c. With an affective education program, what percent of potential youth suicides of the **impulsive/aggressive** type would be successfully referred?

    P(successful referral | PYS/IA) = 0 ____%

  d. With an affective education program, what percent of potential youth suicides of the **normal risk** type would be successfully referred?

    P(successful referral | PYS/NR) = 0 ____%

When answering these last four questions, remember that referral can occur either because the potential youth suicide himself or a friend caused the referral. Furthermore, keep in mind the fact that not all children, especially not all youths who are potential youth suicides, will attend all four years of high school. In general, the dropout rate in high school is about 1.7% at age 14, 9.7% at age 15, 8.1% at age 16, and 6.4% at age 17. Thus, only about 76% of youths who start high school actually complete it. These dropout rates might well be higher for youths who are potential youth suicides. Thus, potential youth suicides will be exposed to an affective education program for variable lengths of time and also will be exposed for different lengths of time to school friends who might help by either treating or referring them for care.

INTERVENTION 6: RESTRICTING ACCESS

The last category of interventions to be considered is the restriction of youths' access to the instruments of suicide. We will consider three main groups of suicide instruments: firearms, drugs, and high places (e.g., bridges, towers). When answering these questions, you can consider the entire group of potential youth suicide victims, including both those under the care of professionals and those not currently under care. Thus, this set of professionals and those not currently under care. Thus, this set of interventions will be aimed at those who, whether or not they are under care, are "treatment failures" in the sense that they have decided, at least for the moment, to commit suicide and are merely seeking a means by which to accomplish it. A possible intervention is that if access to the means of suicide could be restricted, the immediate suicide threat would at least be postponed, with the hope that postponement would last long enough so that the individual could either get past a unique suicide crisis or could gain sufficient insight to seek professional help, which in turn might be successful in curing the basic problem.

We are contemplating a broad spectrum of public and private activities for restricting access to these three groups of suicide instruments. For example, to restrict access of youths to guns, we would implement specific activities such as banning the sale of firearms to minors. In addition, many youths have access to firearms in their own homes or in the homes of friends; a licensing and registration requirement might decrease the availability of handguns in youths' homes.

To restrict access to drugs, we would consider activities such as limiting prescriptions for potentially lethal drugs to small (e.g., seven day) supply. And to restrict access to high places, we would implement activities such as erecting barriers on bridges and requiring locks on doors giving access to the roofs of tall buildings. The proposed interventions are described more fully in Appendix C.

The questions that must be answered in order to estimate the impact of any of these activities are as follows. First, what proportion of suicides are committed currently by each of these methods? Second, if access to any of these particular methods were eliminated for potential youth suicides who would have committed suicide by that means, what proportion of them would merely find other methods and proceed to commit suicide? Thus, an important factor that should be considered when answering the questions is the impulsivity of potential youth suicide victims; if we could restrict their access for a short time, would the impulsive period pass and would the potential youth suicide by "out of danger"? On the other hand, it is likely that some potential youth suicides are so troubled and their problems so chronic that even if immediate access to a method of suicide were restricted, the individual would persist and find another method. To assist you in answering these questions, we can provide the following data on the proportions of suicides that are currently committed by various means (Table 7). However, keep in mind that if an individual cannot commit suicide by a particular method, it is possible that he would merely choose a different method.

To provide further assistance in answering these questions, experts at the CDC have estimated the extent to which each of the three main categories of activities would actually decrease the proportion of potential youth suicides who have access to each particular method of suicide at the time the suicide is being contemplated. For activities designed to restrict access to firearms, the CDC experts estimate that the program defined above would deny access to firearms for about 50% of suicide cases, for at least two weeks. The CDC experts estimate that the activities designed to restrict access to drugs would accomplish that for at least 75% of potential youth suicides who would choose that method for at least two weeks. For the activities designed to restrict access to high places, it is estimated that the activities for this method would restrict access to high places for about 25% of potential youth suicides who would use this method.

Given these estimates of how each of the sets of activities would restrict the proportions of suicide victims who have access to that particular method of suicide, we need your help in estimating, for **those individuals whose access is restricted at least temporarily,** how the probability of suicide will be decreased. Notice that for individuals who did not actually have their access restricted, the probability of suicide (in the absence of any other intervention) will be 100%. We are focusing here only on those potential youth suicides whose access to a particular method of suicide is restricted, and trying to estimate how that will decrease their long-term probability of committing suicide (i.e., before age 25).

For firearms, please estimate the decrease in the long-term probability of suicide (by any method) that would occur if a potential youth suicide victim of each diagnostic type had his or her immediate access to guns restricted. That is, estimate:

	Without Program	With Program
30 a. What proportion of potential youth suicides of the **depressive** type would still commit suicide despite restricting access to firearms?		
$P(\text{suicide} \mid \text{PYS/D})$	100%	___%
b. What proportion of potential youth suicides of the **manic depressive** type would still commit suicide despite restricting access to firearms		
$P(\text{suicide} \mid \text{PYS/MD})$	100%	___%
c. What proportion of potential youth suicides of the **impulsive/aggressive** type would still commit suicide despite restricting access to firearms?		
$P(\text{suicide} \mid \text{PYS/IA})$	100%	___%
d. What proportion of potential youth suicides of the **normal risk** type would still commit suicide despite restricting access to firearms?		
$P(\text{suicide} \mid \text{PYS/NR})$	100%	___%

Methods Employed by Youth Suicides

Firearms[1,2]	62.5%
Poisoning by all medications[2] (tranquilizers and psychotropic agents, including antidepressants: 1.8%)	5.9%
Jumping from high places	2.8%
Other (including hanging, poisoning by carbon monoxide and other means, etc.	28.8%

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1. Handguns have been estimated to constitute about 80% of the firearms used in suicides (and about 50% of the means for all youth suicides). Only about 7.6% of death certificates indicating suicide as the cause of death specify handguns as the instrument.
2. Firearms are used more frequently by males and poisoning more frequently by females than these composite statistics indicate.

Table 2.

Please estimate similar figures for how restricting access to potentially lethal medications would decrease the chance of eventual suicide (before the age of 25).

	Without Program	With Program
31.a. What proportion of potential youth suicides of the **depressive** type would still commit suicide despite restricting access to lethal medication?		
P(suicide | PYS/D)	100%	____%
b. What proportion of potential youth suicides of the **manic depressive** type would still commit suicide despite restricting access to lethal medications?		
P(suicide | PYS/MD)	100%	____%
c. What proportion of potential youth suicides of the **impulsive/aggressive** type would still commit suicide despite restricting access to lethal medications?		
P(suicide | PYS/IA)	100%	____%
d. What proportion of potential youth suicides of the **normal risk** type would still commit suicide despite restricting access to lethal medications?		
P(suicide | PYS/NR)	100%	____%

Finally, please estimate how eliminating access to high places will decrease the chance of suicide in those who would first choose to jump from high places as their method of suicide. That is, please estimate:

	Without Program	With Program
32. a. What proportion of potential youth suicides of the **depressive** type would still commit suicide despite restricting access to high places?		
P(suicide | PYS/D)	100%	____%
b. What proportion of potential youth suicides of the **manic depressive** type would still commit suicide despite restricting access to high places?		
P(suicide | PYS/MD)	100%	____%
c. What proportion of potential youth suicides of the impulsive/aggressive type would still commit suicide despite restricting access to high places?		
P(suicide | PYS/IA)	100%	____%
d. What proportion of potential youth suicides of the normal risk type would still commit suicide despite restricting access to high places?		
P(suicide | PYS/NR)	100%	____%

THANKS

We greatly appreciate your time in answering these questions. We understand that they are exceedingly difficult questions. Nobody knows the answers; we all feel great discomfort when trying to estimate answers to these types of questions. However, we also appreciate that the only possible way to begin to develop a rational strategy for reducing this terribly important problem is to make our best estimates of the facts, make preliminary judgments about programs, design pilot projects, and get better information. The answers you have provided in this questionnaire will be indispensable in helping us accomplish these tasks.

We will send you the results of this questionnaire, and send you the analysis of each of these interventions as soon as they are available.

Please complete your name, address, and telephone.

____
Name

____
Department

____
Institution

____
Address

____
City, State, ZIP

Telephone:

W (   )______________

H (   )______________

ECONOMIC IMPACT OF YOUTH SUICIDES AND SUICIDE ATTEMPTS

Milton C. Weinstein, Ph.D., Henry J. Kaiser Professor of Health Policy and Management, Institute for Health Research, Harvard School of Public Health, Boston, Massachusetts

Pedro J. Saturno, M.D., M.P.H., Department of Health Policy and Management, Harvard School of Public Health, Boston, Massachusetts

SUMMARY

In economic and human terms, youth suicide in the United States is a public health problem of the first magnitude, and one that is growing rapidly. Each youth suicide in the United States results in the loss of 53 years of human life and $432,000 of economic productivity. The national costs of youth suicides in 1980 included 276,000 years of life lost, 217,000 years of productive life lost before the age of 65, and economic costs of $2.26 billion. With the costs of youth suicide attempts added in, the figures rise to 262,000 years of productive life lost, and economic costs of $3.19 billion.

The costs of youth suicides are concentrated disproportionately among males, in the west, and in non-metropolitan areas. Suicides by firearms and explosives account for nearly two-thirds of the national toll.

By the year 2000, if present trends continue, the cost of youth suicide will increase from 276,000 to 346,000 years of life lost, and from $2.26 billion to $2.65 billion, even with a shrinking population base in the 15 to 24 year range.

If heart disease and cancer are regarded as the major public health problems in the United States, then youth suicide ranks closely behind. In terms of years of life lost, suicides in the 15 to 24 age group take a toll equivalent to 70 percent of the loss due to heart disease in the 35 to 44 age group, 60 percent of the loss due to cancer in the same age group, and 25 percent of the loss due to each disease in the 45 to 54 age group. In terms of years of productive life lost, youth suicides take a toll equivalent to 83 percent and 75 percent of the losses due to heart disease and cancer, respectively, in the 35 to 44 age group and 38 percent of the losses due to each disease in their decade of peak impact, the 45 to 54 age group.

Relative to its social and economic importance, youth suicide is currently receiving a disproportionately small share of public health resources.

INTRODUCTION

In 1980, 5,239 young Americans between the ages of 15 and 24 committed suicide. The risk of suicide in this age group has increased steadily, from 4.5 per 100,000 per year in 1950 to 12.3 per 100,000 per year in 1980, suggesting that the problem is worsening. One in 400 males who are 15 years old will commit suicide before reaching the age of 25.

The burden of youth suicide (that is, suicide between the ages of 15 and 24) on society is enormous. The loss of life expectancy and the associated loss of economic productivity, while perhaps the major impacts, are not the only costs. The direct medical and legal costs of suicides, as well as the effects of these events on the quality of the lives of parents, siblings, friends, teachers, and others also must be considered. In addition, suicide attempts (estimated at 8-10 for each completed suicide) impose medical costs as well as substantially impaired quality of life, and cause lost economic productivity because of residual chronic disabilities.

This economic impact analysis of youth suicide shares two underlying objectives with similar analyses of other public health problems. First, an economic impact analysis can be used to assess the potential benefits of prevention. Because the cost of a youth suicide represents potential savings for an effective suicide prevention program, these data are key elements in cost-effectiveness and cost-benefit analyses of preventive interventions. Second, comparative analyses of economic impacts across disease categories can help guide priorities for prevention research among public health problems that compete for resources.

We define the scope of economic impact analysis to include both health and economic dimensions. Among the health dimensions, measured in demographic units, are lives lost, **years** of life lost, and years of impaired health (physical, occupational, social, and emotional). The health consequences of youth suicides are best reflected in the number of years of life lost, whereas suicide attempts often result in impaired years of life. The measure known as quality-adjusted life expectancy (1) may be used if a single summary statistic incorporating both loss of life expectancy and impaired quality of life is desired.

The purely economic consequences of youth suicides and suicide attempts include direct medical care costs (for those who are treated before death) and direct medico-legal costs, such as autopsies and criminal investigation. Premature death and disability also result in lost economic productivity for the society. These "indirect" costs may be measured in monetary terms by the value of the earnings that would have compensated the deceased or disabled individuals for their contributions to society's output, or they can be measured in demographic terms by the number of **productive** years of life lost (e.g., years lost up to age 65). We employ both measures in our analysis.

The choice of measures on which to focus depends on the decisions that are to be informed by the data. Cost-effectiveness evaluations of preventive interventions would make use of data on lost life expectancy (or quality-adjusted life expectancy) and direct economic savings. Cost-benefit evaluations, which require that all consequences be measured in economic terms, would rely on data on lost earnings to translate health impacts into economic values. Priority-setting decisions about research may consider both public health consequences and their economic counterparts. In this paper, our purpose is to provide a broad range of measures that permit the user of the data to focus on the most pertinent measures for the decisions being faced.

Our measures of economic impact of youth suicide are incidence-based, not prevalence-based. Incidence-based measures of the cost of disease capture the consequences, over time into the future, of events (i.e., suicides and suicide attempts) that occur in a given time interval. Prevalence-based measures reflect the consequences, during a given time interval, of events that occurred in the past. For purposes of evaluating preventive strategies, we regard the incidence-based approach as more appropriate, because it measures the future stream of potential savings attributable to reducing suicide rates during a given time interval. Our data, therefore, are presented in the incidence-based format.

The consequences of youth suicide can be calculated for the entire U.S. population, aged 15 to 24, or disaggregated into several subpopulations. We made stratified estimates based on the following variables: age subrange (15-19 vs. 20-24), sex, race (white vs. nonwhite), geographical region (northeast vs. northcentral vs. south vs. west), location in metropolitan area (SMSA vs. non-SMSA), and method of suicide or suicide attempt (firearms/explosives vs. hanging/strangulation/suffocation vs. poisoning by solid or liquid vs. poisoning by gas vs. other methods). Because of data limitations, we were unable to stratify by other, potentially informative, variables such as socioeconomic status, education of the suicide victim or parents, or presence or absence of mental disorder in the suicide victim or parents.

Each measure of health or economic burden in a population can be expressed in many ways. We have used three such measures: burden per event (i.e., per suicide or suicide attempt), burden per 1,000 population, and total burden. Measuring the burden per event may be the most useful way to evaluate the benefits of a preventive intervention for individuals at risk; burden per 1,000 population may be the most useful way to evaluate the benefits of a population-based preventive program or to compare the burden of suicide in different subpopulations; and total burden may be the most useful way to guide priorities for research and to direct public attention to the problem.

A definitional problem arose in considering precisely for what events the economic impact is to be measured. Are we to consider the event to be only the suicide or suicide attempt itself, or also the condition(s) (such as depression, drug abuse, or personality disorders) that may culminate in a suicide or suicide attempt? We chose to focus on suicides and suicide attempts *per se*. We note, however, that preventive interventions may also reduce the costs and consequences of these underlying conditions, or they may result in increased costs of treating these conditions.

Before turning to our methods and findings, a comment is in order about the availability of data. Epidemiologic data on suicides through 1980 were generally available, thanks to the Violence Epidemiology Branch of the Centers for Disease Control (CDC) (2). Data on remaining life expectancy (3) and age-specific earnings (4) were also available. There were, however, notable gaps in the data. Quantitative information on the effects of suicide on families, including effects on ability to work, and reduced quality of life, was unavailable. Data on direct costs, especially medico-legal costs, were not generally available, although we were able to make some estimates from local (and possibly idiosyncratic) sources. Perhaps most important, data on the epidemiology and consequences of suicide attempts are generally nonexistent. Our philosophy has been to lay out a framework for evaluating the economic impact of suicides and suicide attempts, to supply preliminary estimates from available data where possible, and to supplement sparse data with many assumptions and extrapolations for illustrative purposes. The obligatory caveat that the findings presented should be regarded as preliminary and suggestive, rather than final and definitive, must not be taken lightly.

METHODS AND DATA SOURCES

We performed analyses of four basic types. First, we calculated the health and economic consequences of a single youth suicide. Second, we used these estimates, together with epidemiologic data on the national incidence of youth suicide, to estimate the aggregate national consequences of youth suicides, both in the year 1980 and projected to the year 2000. Third, we estimated the economic consequences of youth suicide attempts. Finally, we compared the health and economic impacts of youth suicides with the corresponding impacts of other major causes of death during comparable periods of life. Our methods, assumptions, and data sources are described in the following paragraphs.

Consequences of single youth suicide. We calculated four measures of impact per youth suicide: years of life expectancy lost (YLL), years of productive life expectancy lost (YPLL), lost economic productivity measured by earnings lost, and direct economic cost. The first three were calculated separately by age subrange (15-19, 20-24), sex, and race.

Years of life expectancy lost were estimated from 1980 United States life tables (3) by sex and race. For this purpose, suicides were assumed to occur at the midpoint of the relevant age subrange. We assumed that individuals who commit suicide would otherwise have had the same life expectancy as other persons of the same age.

Years of productive life expectancy lost are defined as the expected number of years of life lost up through the 65th year. These calculations were also based on 1980 U.S. life tables (3).

Lost earnings, a measure of "indirect" economic cost of youth suicide, were calculated by the method of Rice et al. (4). Age-sex-specific annual earnings in 1980, including supplemental benefits such as retirement contributions, were added to estimates of the value of housekeeping services (4). For each age and sex, these annual earnings were multiplied by the sex-specific probability of survival to that age (3), increased by an annual productivity growth factor (based on the ratio of per capita compensation growth to growth in consumer prices during 1970-84) (5,6), and discounted to present value at an annual rate of 4 percent. We assumed that individuals who commit suicide would otherwise have had the same expected productivity during the rest of their lives as other persons of the same age.

The direct cost of a youth suicide includes medical care cost and medico-legal cost. Medical care cost is the sum of hospital cost and physician fees. Suicide victims who die in a hospital were assigned to Diagnostic-Related Groups (DRGs) most closely corresponding to the method of suicide. The unit hospital costs for these DRGs were based on the New Jersey hospital reimbursement schedule for 1982 (7), adjusted for inflation to 1980. The percentages of youth suicides by method were obtained from CDC data (2). We assumed that 10 percent of youth suicide victims would die in hospitals (8), regardless of method. Finally, we added 5.7 percent of hospital costs to account for physician fees (9).

Medico-legal costs per suicide may include the cost of autopsy, estimated in Rhode Island to be $1,000, and the cost of investigations, estimated to require an average of 15 hours at $50 per hour (W. Sturner, personal communication). We obtained estimates that 43.2 percent of male suicides and 51.0 percent of female suicides result in autopsies (8), and assumed that 70 percent of all suicides result in investigations (which are compulsory in approximately half the States).

National consequences of youth suicide in 1980. Data on the numbers of youth suicides, by age subrange, sex, and race (2) were multiplied by each of the measures of impact per suicide to yield national estimates of years of life lost, years of productive life lost, lost economic productivity, and direct economic cost.

The distribution of the national impact of youth suicides according to geographic region, metropolitan location, and suicide method was also estimated. The distribution by geographic region was expressed in terms of total impact and impact per thousand population, as was the distribution between metropolitan (SMSA) and non-metropolitan (non-SMSA) areas. The distribution of impact by suicide method was calculated in aggregate national terms only. In these calculations, the numbers of suicides by region, location, and method were obtained from CDC data (2), and multiplied by each measure of the average impact per youth suicide for the nation as a whole (Table 1). (Tables appear at the end of this chapter.) No adjustments were made to account for differences in life expectancy or earnings by region, location, or method.

Projections to the year 2000. Projections of the national impact of youth suicides in the year 2000 were based on three successive extrapolations. First, trends in youth suicide rates per capita during 1970-1980 (2) were extrapolated to 2000, according to a smoothed linear growth curve. Next, we extrapolated the 15 to 24 year old population according to Census Bureau projections (10). Finally, we extrapolated trends in life expectancy observed between 1975 and 1983 (11). No changes in the mix of youth suicides by age subgroup, sex, race, or method were assumed.

Economic consequences of youth suicide attempts

The costs of suicide attempts include medical costs, and time lost from work with associated earnings losses. We assumed that eight youth suicide attempts occur for each youth suicide, that 20 percent of these attempters are hospitalized, and that 5 percent of attempts result in permanent disability (9). Hospital costs were based on New Jersey hospital reimbursement rates for DRGs corresponding to the associated methods of suicide attempt. Methods of attempt were assumed to be distributed, according a combination of different figures from the literature (12-16), as follows: 70 percent drug poisoning, 10 percent firearms, 20 percent other. As for the medical costs of suicides, an additional 5.7 percent was added for physician fees.

We assumed an immediate loss of 2.9 productive days lost per attempt (9), plus residual permanent disability in 5 percent. Numbers of years of productive life lost and earnings lost because of permanent disability were estimated in the same way as for successful suicides.

Lost productivity and other costs incurred by family members were not evaluated in this analysis.

Comparisons with other diseases

To place youth suicide in perspective as a public health problem, we compared its health and economic impacts with those of other major diseases during other decades of life. In particular, we compared the impact of suicide during ages 15 to 24 with the impact of heart disease and cancer during the decades 35 to 44, 45 to 54, and 55 to 64. Measures used were years of life lost and years of productive life lost.

Discounting and inflation

All monetary amounts are expressed in 1980 U.S. dollars. Adjustments for inflation were based, as needed, on the Consumer Price Index. Future amounts, once expressed in 1980 dollars, were discounted to present value at 4 percent a year, the rate most commonly used in cost-of-illness studies (4). For most calculations, present values were calculated as of 1980, with the exception of the projections to 2000, which were calculated as of the year to which the projection was being made. Years of life lost were not discounted, although cost-effectiveness analyses of preventive interventions should use discounted values.

Quality of life

No attempt was made to estimate losses of quality of life to the victim, family, friends, or others. Such an estimate would require survey data on psychosocial impacts not presently available.

FINDINGS

The consequences of a single youth suicide, by age, sex, and race, are displayed in Table 1. The average number of years of life lost is 52.7, and the average number of years of productive (<65) life lost is 41.5. These figures are somewhat higher for females than males, whites than nonwhites, and 15 to 19 year olds than 20 to 24 year olds, owing to the greater life spans of the former subgroups. The loss of economic productivity attributable to each suicide averages $431,600, in 1980 dollars. The direct economic cost per suicide (not shown in the table) is $1,067, of which $96 is medical cost ($961 for each of the 10 percent who are hospitalized), $446 is for autopsies, and $525 is for criminal investigations.

The national economic impact of youth suicides in 1980 is displayed by age, sex, and race in Table 2. In total, 275,900 years of life were lost as a result of suicides in that year. Of those lost years, 217,400 would have been under the age of 65. The amount of economic productivity forgone was $2.26 billion as a consequence of youth suicides in 1980 alone. The direct economic costs were small by comparison, $5.6 million.

The distribution of economic impact by geographical region is shown in Table 3. Whereas youth suicides have their greatest aggregate impact in the South, this is attributable to the population size; the greatest per capita impact is in the West, the least is in the Northeast.

The distribution of economic impact by metropolitan versus nonmetropolitan location is given in Table 4. Evidently, youth suicide has its greatest aggregate impact in metropolitan areas, where most of the population lives, but has more impact on a per capita basis in nonmetropolitan areas.

Table 5 distributes the economic impact of youth suicides by method. Firearms alone accounted for more than 170,000 years of life lost in 1980, and more than $1.4 billion of lost productivity.

Projections of the national economic impact of youth suicides to the year 2000 are presented in Table 6. The top half of the table shows the only variable that is projected to change, the rate of youth suicide in the 15 to 24 year old population. The bottom half of the table also reflects trends in population size and gains in life expectancy. The economic costs of youth suicide will exceed 350,000 life years and $2.6 billion in the year 2000, despite a declining population in this age group.

The economic costs of suicide attempts are substantial, as shown in Table 7. The direct medical costs, $6 million in 1980, are comparable to the direct medical and legal costs of suicides. The indirect costs associated with disability are 44,236 years of productive life lost and $914.2 million in lost earnings. Suicide attempts, therefore, add 20 percent and 40 percent respectively, to these two measures of societal impact of youth suicides.

Finally, we compare the economic impacts of youth suicides (ages 15-24) with other major causes of death in 10-year age intervals (Table 8). The number of years of life lost from suicides, ages 15 to 24, is 70 percent of the corresponding number for heart disease deaths, ages 35 to 44, and 60 percent of the corresponding number for cancer deaths, ages 35 to 44. The years of productive life lost are 83 percent and 75 percent, respectively, of the figures for heart disease and cancer deaths, ages 35 to 44. Even comparing youth suicide to the peak decade for years of productive life lost due to heart disease and cancer (ages 45-54), youth suicide accounts for 38 percent of the years of productive life lost from each of those diseases. We note that while mortality from heart disease is declining, mortality from youth suicide is rising.

RECOMMENDATIONS

The magnitude of the economic and human impacts of youth suicide and suicide attempts are sufficiently great, both in absolute terms and relative to other major causes of death and disability, to justify major programmatic efforts comparable to those applied to heart disease and cancer. Specific recommendations are as follows:

1. Based on the criterion of social and economic impact, the problem of youth suicide should be receiving a substantial share of public and private health resources in relation to other causes of death and disability.
2. Research leading to the development of effective preventive programs against youth suicide should be given the highest priority. Only modest effectiveness rates

would be needed to produce enormous human and economic savings.

3. Evaluations of the cost-effectiveness of available interventions should begin immediately, even in the absence of definitive evidence of their efficacy. The cost of delay in implementing such programs should be weighed against the cost of implementing programs that later prove to be ineffective.
4. Additional data in the following areas are needed to complete an assessment of the social and economic costs of youth suicides and suicide attempts:
    - effects of youth suicides and attempts on the quality of life of family, friends, and others;
    - economic effects of youth suicides on families, including indirect costs attributable to reduced work productivity, and costs of treating psychological disorders secondary to the suicide of the family member; and
    - epidemiology of suicide attempts, including trends over time, and distribution by method of attempt.

Consequences of a Single Youth Suicide, United States, 1980

	YLL[a]	YPLL[b]	Lost Productivity[c]
Ages 15-19			
Males	54.5	44.3	$417,300
Females	61.8	46.3	344,600
Total 15-19	55.8	44.7	404,600
Ages 20-24			
Males	49.8	39.6	464,500
Females	56.9	41.3	354,800
Total 20-24	51.0	39.8	445,700
Ages 15-24			
White Males	52.4	41.9	456,400
Nonwhite Males	46.0	38.7	425,500
All Males	51.7	41.6	453,100
White Females	59.4	43.5	356,800
Nonwhite Females	54.3	41.9	347,700
All Females	58.9	43.3	355,900
All Suicides	52.7	41.5	431,600

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[a] Years of life expectancy lost.

[b] Years of productive life expectancy (up to age 65) lost.

[c] Present value of expected earnings plus value of household services, in 1980 dollars, discounted to present value at 4% per annum.

Table 1.

National Economic Impact of Youth Suicides, United States, 1980, by Age, Sex and Race

	YLL[a]	YPLL[b]	Economic Costs ($millions)[c] Direct Costs	Lost Earnings	Total
Ages 15-19					
Males	80,888	65,736		618.89	
Females	19,404	14,523		108.21	
Total 15-19	100,292	80,259		727.10	
Ages 20-24					
Males	142,068	112,863		1325.24	
Females	33,504	24,299		208.98	
Total 20-24	175,571	137,162		1534.22	
Ages 15-24					
White Males	202,210	161,206		1749.94	
Nonwhite Males	20,746	17,392		194.19	
All Males	222,956	178,598		1944.13	
White Females	47,938	34,990		285.62	
Nonwhite Females	4,970	3,832		31.57	
All Females	52,908	38,822		317.19	
All Suicides	275,864	217,420	5.59	2261.32	2266.91

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[a] Years of life expectancy lost.

[b] Years of productive life expectancy (up to age 65) lost.

[c] In 1980 dollars. Lost earnings discounted to present value at 4% per annum.

Table 2.

National Economic Impact of Youth Suicides, United States, 1980, by Geographic Region

	YLL[a]	YPLL[b]	Lost Productivity[c]
Total Region			
Northeast[d]	48,481	38,488	$400,773,000
North Central[e]	70,674	55,725	577,426,000
South[f]	93,733	73,876	768,287,000
West[g]	62,626	49,340	514,835,000
Total U.S.	275,864	217,420	$2,261,321,000
Per 1000 Population			
Northeast	0.99	0.78	$8,157
North Central	1.20	0.95	9,809
South	1.24	0.98	10,193
West	1.45	1.14	11,925

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[a] Years of life expectancy lost.

[b] Years of productive life expectancy (up to age 65) lost.

[c] Present value of expected earning plus value of household services, in 1980 dollars, discounted to present value at 4% per annum.

[d] Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont

[e] Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

[f] Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia

[g] Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

Table 3.

National Economic Impact of Youth Suicides, United States, 1980, by Metropolitan versus Nonmetropolitan Location

	YLL[a]	YPLL[b]	Lost Productivity[c]
Aggregate			
Metropolitan	196,617	154,891	$1,617,799,000
Nonmetropolitan	79,247	62,538	643,523,000
Total	275,864	217,420	2,261,321,000
Per 1000 Population			
Metropolitan	1.16	0.91	$9,548
Nonmetropolitan	1.39	1.09	11,267

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[a] Years of life expectancy lost.

[b] Years of productive life expectancy (up to age 65) lost.

[c] Present value of expected earnings plus value of household services, in 1980 dollars, discounted to present value at 4% per annum.

Table 4.

National Economic Impact of Youth Suicides, United States, 1980, by Method of Suicide

	YLL[a]	YPLL[b]	Lost Productivity ($ millions)[c]
Firearms and Explosives	171,800	135,427	1,406.79
Hanging, Strangulation, Suffocation	46,765	36,917	378.82
Poisoning by Solid or Liquid	20,788	16,360	172.35
Poisoning by Gas	17,518	13,772	144.93
Other	19,014	14,953	158.42
Total	275,864	217,420	2,261.32

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[a] Years of life expectancy lost.

[b] Years of productive life expectancy (up to age 65) lost.

[c] Present value of expected earnings plus value of household services, in 1980 dollars, discounted to present value at 4% annum.

Table 5.

Projected National Economic Impact of Youth Suicides, United States, 1980-2000

	Suicide Rate Projected Only				
			Economic Costs ($ millions)[c]		
	YLL[a]	YPLL[b]	Direct Costs	Lost Earnings	Total
Year					
1980	275,864	217,420	5.59	2,261.32	2,266.91
1990	330,361	261,666	6.66	2,725.13	2,731.79
2000	384,319	304,404	7.75	3,170.23	3,177.98
	Suicide Rate, Population, and Life Expectancy Projected				
Year					
1980	275,864	217,420	5.59	2,261.32	2,266.91
1990	296,383	234,524	5.74	2,347.23	2,352.97
2000	345,591	273,708	6.44	2,645.71	2,652.15

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[a] Years of life expectancy lost.

[b] Years of productive life expectancy (up to age 65) lost.

[c] In 1980 dollars. Lost earnings discounted to present value at 4% per annum.

Table 6.

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National Economic Impact of Youth Suicides and Youth Suicide Attempts, United States, 1980

			Economic Costs ($ millions)[c]		
	YLL[a]	YPLL[b]	Direct Costs	Lost Earnings	Total
Youth Suicides	275,864	217,420	5.59	2,261.32	2,266.91
Youth Suicide Attempts		44,236	6.03	914.20	920.23
Total	275,864	261,656	11.62	3,175.52	3,186.14

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[a] Years of life expectancy lost.

[b] Years of productive life expectancy (up to age 65) lost.

[c] In 1980 dollars. Lost earnings discounted to present value at 4% per annum.

Table 7.

Youth Suicide, Heart Disease, and Cancer: Years of Life Lost (YLL) and Years of Productive Life Lost (YPLL), United States, 1980

	Number of Deaths	YLL Per Death	YPLL Per Death	Total YLL	Total YPLL	Youth Suicide as % of YLL	Youth Suicide as % of YPLL
Suicide							
Age 15-24	5,239	52.7	41.5	275,864	217,420	100	100
Heart Disease							
Age 35-44	11,433	34.3	22.8	392,605	261,110	70	83
Age 45-54	41,078	25.9	13.8	1,065,395	564,971	26	38
Age 55-64	107,244	18.6	4.6	1,997,770	493,322	14	44
Cancer							
Age 35-44	12,470	36.6	23.3	456,072	290,211	60	75
Age 45-54	41,030	27.4	13.9	1,124,222	571,173	25	38
Age 55-64	94,645	19.4	4.7	1,832,947	445,697	15	49

Table 8.

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SUICIDE ATTEMPTS IN TEEN-AGED MEDICAL PATIENTS

Lee N. Robins, Ph.D., Professor of Sociology in Psychiatry, Washington University School of Medicine, St. Louis, Missouri

SUMMARY

Adolescents (aged 13-18) attending free clinics in 10 large cities were interviewed. They were asked whether they had attempted suicide in the current year or previously. Four percent of the 2,792 interviewed had made an attempt in the current year, and 8 percent at some time in their lives. Patients who were female, white, and 15 or older had the higher rates of suicide attempts. Seventeen percent of white girls 15 to 18 had made an attempt, while none of the younger black boys had.

Factors strongly associated with suicide attempts included multiple depressive symptoms, living apart from parents (often after running away from home), having a history of conduct problems, having psychiatrically ill family members, repeated drunkenness, use of drugs other than marijuana, and being assaulted, arrested, or incarcerated. No association was found with parents' occupational level, illegitimate pregnancy, and experiencing a family member's death.

The correlates discovered were combined into a guide for clinic personnel to help them recognize youngsters at risk of suicide attempts. Such a guide appears necessary because few attempters voluntarily mention their suicidal ideation to their clinic physicians.

A program of research is suggested that could evaluate the effectiveness of the suggested screening device.

RELEVANCE OF SUICIDE ATTEMPTS TO SUICIDE

The relationship between suicide attempts and completed suicides is puzzling. Populations of suicide attempters and completers differ demographically (Clayton, 1983; Stengel, 1965). Men have higher rates of completed suicides (Rich et al., 1986) but women have higher rates of suicide attempts. Suicide attempts are rare in children, increase from early adolescence through young adulthood (Fisher and Shaffer, 1984), and then decline; suicides are similarly rare in children and increase through adolescence into young adulthood, but they do not then decline, and for white men, the group with the highest suicide rate, rates increase with age through at least age 75. Whites have higher rates of both attempts and completions than blacks.

Attempters and completers may differ considerably in their motivations. While most suicides probably intended to die, it is less clear that this is true of suicide attempters. While some appear to be persons who tried to kill themselves but failed, there are those who report that their attempt was meant to punish persons they felt had mistreated them or to avoid responsibility for their own misbehavior.

Despite the demographic and motivational contrasts between the populations of suicides and attempters, the two groups do overlap. Many completed suicides were preceded by suicide attempts in both adults (Wang et al., 1985; Schmidt et al., 1954) and young people (Otto, 1972; Cohen-Sandler et al., 1982), and the chances of dying later by suicide are much higher for attempters than for the general population. Attempters are therefore a relevant population to study, particularly because they offer an opportunity to study attempts both retrospectively and prospectively, and to study suicide prospectively. Because attempters are alive and able to be interviewed, investigators may discover precursors of their past attempts and predictors of subsequent suicide attempts or suicides that might not be detected in retrospective studies of completed suicides where informants are limited to surviving friends, relatives, or others, such as the suicide's physician. By following attempters prospectively through death records, it should be possible to learn which characteristics best predict actual suicides. If we can identify risk factors for the suicide attempts that precede actual suicides, it may be possible to design interventions to reduce these risks, and thus reduce the number of future completed suicides.

PROBLEMS IN STUDYING SUICIDE ATTEMPTS

Most previous studies of suicide attempts have been restricted to people whose attempts received medical attention. These treated attempters are probably not representative of the total population of attempters, in as much as their attempts caused injury sufficient to bring them to medical attention.

A second issue in studies of treated cases lies in the choice of a comparison group. Identification of risk factors requires finding characteristics that occur more frequently among the group who attempt suicide than among a comparable group of nonattempters. To which nonattempters should the treated attempters be compared. Other patients of the same medical facility may be inappropriate. Suicide attempts even by middle class persons often lead to their hospitalization in public hospitals. They enter through emergency rooms after being discovered unconscious or too impaired to make other arrangements. Patients who enter the same hospitals in a less urgent fashion are likely to be of lower social status and to have quite different backgrounds. Differences found between the two may therefore have more to do with choice of usual treatment source than with suicide attempts. If the comparison group is restricted to fellow emergency room patients to make the social backgrounds more comparable, the choice may still be a poor one, because the victims of violence and accidents treated there may share with suicide attempters risk factors that apply to violence of all kinds. These shared factors will be missed as predictors of suicide attempts because they will not differentiate the two groups.

Suicide attempters found in surveys of general population are representative of the whole population of attempters, those whose attempt did and those whose attempt did not result in medical care. Studies in the general population also provide natural control groups in persons of similar age, sex, and race who have never made an attempt. Unfortunately, general population studies are expensive to carry out because finding a sufficient number of cases of events as rare as suicide attempts requires large samples. In addition, respondents in a typical area survey may be more reluctant than patients to admit attempts, because the interview will usually take place at a time remote from the crisis surrounding their attempt.

A useful alternative may be clinic samples. By attending a clinic, a youth has already demonstrated a willingness to discuss personal problems, and clinics treat young persons both in and out of school. Contacting youths on the clinic premises often makes it possible to approach them directly, without having to go through a suspicious parent. If risk factors for suicide attempts are also risk factors for clinic attendance (as pregnancy, psychiatric problems and interpersonal problems might be) the clinic population would also be particularly rich in attempters, overcoming the problem of the rarity of attempts. One drawback is that some youths attending clinics are acutely ill, making them unwilling or unable to tolerate a detailed interview. However, as we will demonstrate below, adolescent clinic patients for the most part attend for checkups, for information about birth control, for pregnancy tests and prenatal and postnatal care, and for nonserious upper respiratory infections. The proportion with illnesses that preclude participating in an interview is small.

Whereas clinic populations may make attempters more accessible, these populations are not representative of all youngsters. Youngsters seen by private physicians are omitted, as are youngsters who have little or no contact with medical services of any kind. In addition, patients with more frequent attendance will be overrepresented in any sample based on attendance on selected days, since the more frequently a youngster attends, the greater the chance that he or she will be present on the day selected for patient recruitment. This explains why the adolescent clinic patients we describe below are predominantly female and in the higher teen ages: Pregnancy is the prime reason for frequent visits to clinics.

METHODS

A study of youthful attenders at free general medical clinics provided interviews with 2,792 clinic attenders aged 13 to 18. It was carried out in 1984-85 in 10 cities, including New Haven, Boston, Dallas, Chicago, Buffalo, Indianapolis, Los Angeles, St. Louis, New Orleans, and Jackson, Mississippi. The clinics were located in independent buildings, in hospitals, or in schools. In seven cities, the clinics were for teenagers only, were affiliated with pediatrics departments of medical schools, and were supported by the Robert Wood Johnson Foundation to organize consolidated services for this age group; in three cities, the clinics served adults as well as adolescents, and were supported by local governments.

Youngsters were invited to participate as they appeared at the clinics, and fewer than 4 percent refused. Interviews were generally carried out at the clinic immediately before or after the medical appointment; when there was insufficient time, the interview was carried out within a few days of the clinic attendance at a mutually agreed-on location. The patients understood that they were participating in a research study, and that the information they gave would not be shared with the clinic staff or parents. This understanding probably increased their honesty. (The interviewers were instructed to violate this understanding, first informing the youngster that they were doing so, if they learned of currently active suicidal ruminations or plans; however, no such instance occurred.)

Well-trained professional interviewers administered the fully structured interview. It lasted about 45 minutes and covered the young person's living situation, physical and mental health, social and school adjustment, behavior problems, recent life events, and treatment experience. The question about suicide attempts was the fourth in a sequence of related questions that immediately followed the review of symptoms of depression. The set of four questions were:

Has there ever been a period of two weeks or more when you thought a lot about death--either your own, someone else's, or death in general?

Has there ever been a period of two weeks or more when you felt like you wanted to die?

Have you ever felt so low you thought of committing suicide?

Have you ever attempted suicide?

Those who answered the last question positively were considered to have attempted suicide, and they were then asked when their first and last attempts occurred. We did not determine how serious the attempt was or how lethal the method used, although such questions were included in the followup interview a year later. This paper will discuss three groups of attempters: those who had made **any** attempt in the past year, those whose **first** attempt was in the past year, and those whose last attempt was more than a year prior to interview.

The current report will discuss the proportion of the teen-aged sample who reported suicide attempts (i.e., answered "yes" to the last of the four questions above) and search for correlates of these attempts that might serve as criteria for selecting high risk samples for intervention. A method will be suggested by which clinic personnel could utilize these correlates to systematically review records of clinic attenders and by asking a minimal number of questions to identify most of the youngsters in danger of attempting suicide.

THE CLINIC SAMPLE

Demographics

These inner city clinics were attended predominantly by blacks (71%); the rest were largely non-Hispanic whites, with 8 percent "other" (principally Hispanics). Females made up 77 percent of our sample, and predominated in all except the school-based clinics.

The sample clustered at the upper end of the age range. Fewer than 15 percent were under the age of 15. Only 24 percent were still living with both biological parents, and the occupations of their parent(s) were predominantly blue collar (66%); 9 percent of the heads of their households were unemployed.

Expected Effects of Demographic Distribution on Attempt Estimates

Because, as noted above, suicide attempts are higher in females than males and increase with age through adolescence, the fact that clinic patients are predominantly females in the later teen years should tend to raise their rates as compared with the general population. However, because attempts appear to be more common in whites than blacks, the fact that the clinic is mostly black should tend to lower rates. Less is known about the association between living predominantly in broken homes or residing in inner cities and suicide attempts. However, suicide attempters have been found to have an excess of stressful life experiences shortly before their attempts (Robins et al., 1957). Since life in impoverished one-parent homes might be expected to be associated with stress, one might anticipate a high rate of suicide attempts in response to such stress. There is an apparent inconsistency, however, between the finding that social stress often precedes suicide attempts and the relatively low rate in blacks, who suffer more objective stress through poverty and overcrowding. This suggests that suicide attempts may be more influenced by sudden changes in one's level of social stress than in its absolute level. If so, long term stress such as broken homes and inner city residence should be relatively less important than acute changes.

Clinic Attendance as a Factor

Finally, there is the question of how suicide attempts might be related to whatever health problems brought the adolescents to the clinic. In general, psychiatric and physical problems have been shown to be intercorrelated. Since clinic attenders have more physical and psychiatric illness than the general population, they should also have more suicide attempts, although Shaffer found little physical illness among his sample of children who had completed suicides (Shaffer, 1974).

RESULTS

Overall, 4 percent of clinic patients had attempted suicide within the year prior to their selection for study, and 8 percent had attempted at some time in their lives. While the finding that one of every 12 patients said they had tried to kill themselves might lead one to think that this is a population at particularly high risk, this figure is almost identical to that obtained in a survey of 382 intellectually gifted high school students aged 14 to 18 in New York (Harkavy and Asnis, 1985), suggesting that the clinic sample may not have an unusual rate compared to some other adolescents.

The chance of having made an attempt within the past year was particularly high if the young person had made a previous attempt. Among the 138 who had made an attempt more thaNn a year before interview, 22 (16%) had also made an attempt in the current year. Among those with no previous attempt, the proportion who attempted in the past year was only 3 percent.

There seemed to be little direct connection between having made a recent attempt and the occasion of this particular clinic attendance. Most clinic attendance was for a general checkup (25%), care for pregnancy (22%), or seeking birth control advice (17%). The frequency of recent attempts was particularly low for those present only for checkups (2%), but average (4%) for the other two common reasons for attendance (Table 1). About 5 percent of the adolescents came for psychiatric problems, and, as might be expected, they had the highest rate of recent suicide attempts (15%). Presenting with a psychiatric complaint, therefore, is grounds for concern about possible suicide risk, although in this clinic, such patients accounted for only 17 percent of the recent attempters. Those seen for physical illness had higher rates than those who were well, but lower than psychiatric cases. Their rates varied from 4 percent of those with infections to 8 percent of those with an upper respiratory illness or some chronic illness.

MAJOR PRESENTING COMPLAINTS*
AS A CLUE TO SUICIDE ATTEMPT

Presenting Complaint (in order of frequency)		Percent Who Attempted Within Year	Percent of Recent Attempters Accounted for by this Complaint
General checkup	(707)	2	11
Pregnancy Care or Follow-up	(619)	4	21
Birth Control	(465)	4	15
Pain	(216)	7	13
Flu or Cold	(158)	8	11
Infection	(133)	4	4
Psychiatric	(127)	15	17
Information	(97)	5	4
VD	(92)	7	5
Injury	(80)	6	4
Dental Care	(63)	0	0
Chronic Health	(63)	8	4
Menstrual	(46)	2	1

* More than one may be listed.

Table 1.

Since the attempt itself was seldom the reason for attendance, and since so few of the attempters presented with psychiatric symptoms, attempts by young clinic attenders appear unlikely to come to the attention of the medical personnel without direct questioning.

Demographic Correlates of Ever Having Attempted Suicide

As previous studies suggested, rates of suicide attempts at some time in their lives were highest in older adolescent patients (9% vs. 6%), in girls (9% vs. 5%), and in whites (15% vs. 12% of "others" and 8% of blacks) (Table 2). Youths occupying all three high risk demographic categories (i.e., white females above the age of 15) had a rate of 17 percent; when all three were absent (i.e., black males below the age of 15), there were no attempts.

Like a lifetime history of attempts, attempts within the current year were more common in whites than blacks (7% vs. 3%) and higher in females than males (4% vs. 2%). However, whites did not exceed "others" in frequency of current year attempts (both were 7%), and current year attempts were at least as common among younger as among older adolescents (5% vs. 4%). The group with the highest frequency of a recent attempt was white females aged 13 or 14 (12%). Reflecting their having just entered the years at risk of attempts, all but one of the attempters below age 15 had made an attempt in the current year.

Because of the small numbers of "others" in these clinics, ethnic comparisons will be between blacks and whites.

Family Background

Living Arrangements. At the time of interview, only a minority (24%) of these teenagers were still living with both their biological parents. More than half (59%) were living with only one parent--almost always the mother; 9 percent were living with other relatives; 5 percent were married and living with a spouse; and 4 percent were in

DEMOGRAPHIC CORRELATES OF SUICIDE ATTEMPTS

			Percent Ever Attempted
AGE:	Over 15	(2369)	9
	Under 15	(418)	6
RACE:	White	(589)	15
	Other	(220)	12
	Black	(1978)	6
SEX:	Male	(637)	5
	Female	(2150)	9

		Females		Males	
AGE	RACE	N	%	N	%
Older	White	(426)	17	(76)	11
	Other	(124)	13	(51)	16
	Black	(1294)	7	(400)	3
Younger	White	(65)	12	(22)	5
	Other	(34)	9	(12)	0
	Black	(208)	7	(77)	0

Table 2.

nonfamilial arrangements, i.e., with peers, alone, or on the streets.

Residence with two biological parents was associated with the lowest rates of recent suicide attempts (Table 3). (We will consider only recent attempts, because the living arrangements may well have been different at the time of earlier attempts.) The rate rose from 2.5 percent in those living with two biological parents to 14 percent among those in nonfamilial arrangements.

These results are consistent with results both from a Swedish study (Bergstrand and Otto, 1962), which found father's absence to be associated with suicide attempts, and from an American study of attempters seen in an emergency room (Garfinkel et al., 1982), which found attempters to have high rates of absent fathers and child placement in extra-familial settings.

A high rate of attempts among adolescents living in nonfamilial settings and a low rate among those in intact families was found for both younger and older adolescents, both boys and girls, and both blacks and whites. However, for older adolescents, there was no difference in rates when residing with only one biological parent vs. other relatives, and for whites, residence with a spouse was associated with a lower rate than residence with a single parent or other relatives. For blacks, all arrangements involving living with relatives--whether in an intact family, with a single parent, or with other relatives--had a similarly low rate. Blacks' highest rate was found among those living with a spouse.

Social Status. The social status of the adolescent was judged, where possible, by the occupation of the male head of the household in which he or she had resided for the longest time. If there was no male parent in that home, but there was one in the current home, the occupation of the current father figure or if he was unemployed, the mother's occupation was used, similarly choosing the mother figure in the household in which the young person had lived longest, or the current household if there had been no mother figure in the household resided in longest. Because this measure of social status referred to the longest residence rather than the current residence, we will look at its influence on lifetime, rather than recent, suicide attempts.

Parental occupation was not strongly related to suicide attempts, and to our surprise, the rate of attempts was positively correlated with the parental occupational level (Table 4). When the parental occupation was skilled or higher, 9 percent to 10 percent had attempted suicide; when parental occupation was unskilled the rate was 4 percent and when the parent was typically unemployed, it was 5 percent. This trend held for both males and females. However, it did not apply to younger adolescents, for whom the highest rate was when the parent was unskilled or unemployed. The fact that there were very few unskilled or unemployed parents of white adolescents may account in part for the in-

CURRENT LIVING ARRANGEMENTS AND RECENT SUICIDE ATTEMPTS

Current Residence	Percent with Attempts in Last Year N	%
Both parents	(637)	3
One parent	(1596)	4
Other relatives	(23)	4
Spouse	(139)	5
No biological relatives	(103)	14

Table 3.

stability of the effect of parental occupation. Presumably, the association with high status reflects the fact that adolescents from high status families who attend public clinics that typically serve the poor are those who have left the parental home because of problems in the home or because of their own problems; it is these problems, rather than the relatively high occupational status of their fathers, that explain their high rate of suicide attempts.

The inverse correlation between occupational status and suicide attempt may suggest that being in financial straits plays no role in suicide attempts. However, not all families with a breadwinner in a low status job are seriously poverty-stricken, and adolescents reared in high status homes but who are currently living on their own may be in dire financial straits. Although we have no quantitative estimate of adolescents' available funds with which to assess poverty, we did ask whether the adolescent had had serious financial problems in the past year, for example not having enough money for food, rent, clothes, etc. Twenty-five percent reported financial problems of this severity. There was an increase in risk of recent suicide attempts associated with financial problems, with 8 percent having attempted suicide in the last year, compared with 3 percent of those who denied such serious financial problems.

Home Atmosphere and Family Pathology. In addition to asking for an objective description of the household in terms of the persons with whom the adolescent lived, the head of the household's occupation, and financial problems, we asked about family pathology and home atmosphere. We asked whether there had been suicide attempts by nuclear family members and whether any had actually died as the result of attempts, and whether any family member had shown various kinds of psychiatric or behavioral problems. We identified these problems by asking first whether family members had had professional care for psychiatric problems; next, whether they had been impaired by such problems in terms of work or hospitalization; and finally, after presenting thumbnail sketches of persons with various types of psychiatric disorders (depression, mania, schizophrenia, alcoholism, drug abuse, antisocial personality, and mental retardation), whether anyone in the immediate family had had each of these disorders. We will discuss the relation of these family problems to adolescents' suicide attempts at any time, since the problems might have occurred at any time.

Suicide attempts by family members were reported by 5 percent of the patients. Having a suicidal family member was associated with a high risk of having made an attempt themselves. While 7 percent of those without a suicidal family member made an attempt, 26 percent of those with one did so. (The high

PARENT'S OCCUPATION AND SUICIDE ATTEMPTS

Percent Ever Attempted Suicide

			Whites		Blacks	
Parental Occupation	N	Total	N	Total	N	Total
Unskilled	(293)	4	25	0	225	5
Skilled	(1445)	9	344	18	978	6
Lower white collar	(451)	9	131	13	297	7
Higher white collar	(226)	10	51	16	151	7

Table 4.

rate of familial attempts among attempters was also found by Garfinkel, 1982.) Interestingly, attempts were more common in those whose relative survived than in those whose relative died as a result of the attempt (27% vs. 15%), suggesting that knowing that it is possible to survive an attempt may encourage trying it oneself.

Fourteen percent of these adolescents had a family member who had sought professional treatment for psychiatric problems, and 7 percent had a family member impaired by psychiatric illness. Of those whose family member had been treated for psychiatric problems, 18 percent had attempted suicide; of those with a psychiatrically impaired relative, 17 percent had attempted suicide.

A much larger proportion of patients (33%) recognized symptoms of mental illness in their immediate family when the thumbnail sketches were read to them than reported psychiatric treatment or impairment in these family members. Among those with an affected family member, 14 percent had attempted suicide. Rates were still higher when there were multiple diagnoses in the family. When two or three of the diagnostic pictures were recognized, the suicide attempt rate was 19 percent; when four or more were recognized, the suicide attempt rate was 33 percent. (The association of parental psychiatric disorder with suicide attempts again agrees with results of the Swedish study (Bergstrand and Otto, 1962) noted above.) The association of a familial psychiatric disorder with suicide attempts was found for both age groups, both ethnic groups, and both sexes.

To assess family atmosphere, we asked whether there had been much quarreling or fighting in the adolescent's home over the last year. About one-fourth reported such an atmosphere at home, and among those who did, 11 percent had attempted suicide in the last year, compared with 2 percent of the remainder. Suicide attempts were particularly common if the adolescent had been personally involved in the fighting (12% vs. 7% if only others had been involved.)

These results show a clear association between family pathology and suicide attempts. Although each of these factors was associated with an increased risk, the proportion attempting among those exposed to each of these risks was never more than one-third, showing that most young people with these adverse family situations did not attempt suicide. To learn whether the concurrence of different types of family pathology might have a more potent influence, we created a family pathology scale by giving a score of 1 to each adverse factor discussed above: familial suicide attempts, quarreling, treatment for psychiatric disorder, impairment, and presence of disorder. The results are presented in Table 5. When at least four of these adverse family factors were present, as was true in 1 percent of the sample, the risk of ever having attempted suicide increased to 36 percent. When none of these signs of family pathology was present, the rate was 3 percent.

Because this was a powerful monotonic relationship, we considered whether this index of family pathology might be sufficient to select a clinic sample for intervention. We found, however, that most of the adolescents whom the scale would have defined as at risk had not attempted suicide, and those who did attempt in the context of a pathological family constituted only a minority of the attempters. If, for example, we should select for intervention those whose families had three or more signs of pathology, this would involve 10.5 percent of the sample in the intervention program, and would reach only 29 percent of the suicide attempters.

Psychiatric Disorders and Their Symptoms

Completed suicides in adults are much more common in persons with a diagnosis of depression, alcoholism, or drug abuse than in the general population, and persons with one of these three disorders make up most of the completed suicides. Schizophrenics also have an elevated risk of suicide, but the disorder is so rare that schizophrenics form a negligible proportion of all suicides (Robins, 1984). Suicide attempts are also common in persons with each of these diagnoses, as well as in persons with a history of acting-out behaviors (antisocial personality) and in women with a diagnosis of somatization disorder (Robins et al., 1957). Child suicide attempters are distinguished by dysphoria, substance abuse, and by aggressive behavior (Garfinkel et al., 1982). Little is known thus far about how comorbidity--having more than one of these disorders affects suicide risk, nor do we know whether either depression or behavior problems must necessarily be present (Carlson and Cantwell, 1982; Shaffer, 1974). However, recent work has suggested that it is the intersection of depression or substance abuse with an impulsive personality that creates the highest rate of risk (Weissman et al., 1973). Kovacs and Puig-Antich (1986) have called attention to the possible importance of the overlap between depression and aggression or impulsivity in suicide attempts.

To assess the importance of these symptom patterns in adolescents, we will look at the relationship of depressive symptoms (other than suicidal ideation), substance abuse, somatic symptoms without medical explanation, and conduct problems with suicide attempts. We will then look at the overlap between depressive and conduct symptoms to see whether both are required, and if not, whether the combination of the two is particularly virulent.

Depressive Symptoms. Adolescents were asked whether they had ever suffered from each of 23 depressive symptoms, in addition to suicide attempts. Three of these symptoms--thoughts of death, wanting to die, and thinking of suicide--seem likely to be part of the preparation for the attempt itself. And indeed, two of these symptoms were very highly associated with suicide attempts (Table 6). Of those who had a two-week period of wanting to die, 40 percent attempted suicide; and of those who felt so low that they thought of suicide, 46 percent attempted it. However, a small number of attempters (9%) did not describe a preliminary period of depressed contemplation.

The remaining 20 symptoms, each less obviously associated with suicide, included depressed mood for two weeks or more, loss of interest, loss of enjoyment, inability to work because of low mood, irritability, loss of appetite, loss of weight, sudden weight gain, insomnia, oversleeping, fatigue, feeling worthless, feeling physically slowed down, feeling mentally slowed down, being restless

FAMILY PATHOLOGY AND SUICIDE ATTEMPTS

Number of Adverse Family Factors*	N	Percent Who Attempted Suicide %
None	(1423)	3
One	(730)	9
Two	(344)	17
Three	(188)	20
Four	(82)	27
Five	(22)	36

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* Out of:

1. Suicide attempt by relative
2. Quarreling and fighting at home
3. Psychiatric disorders in relative
4. Relative treated for emotional impairment
5. Relative impaired by psychiatric problems

Table 5.

and overactive, hopelessness, trouble concentrating, crying spells, and avoidance of social interaction. Each of these symptoms was associated with an increased risk of suicide attempts. Rates varied from 16 percent in the presence of weight gain to 35 percent in the presence of low mood lasting 2 years or more. Other symptoms with particularly high rates were hopelessness (33%), loss of enjoyment (28%), feeling physically slowed down (28%), feeling worthless (27%), and irritability (26%). Hopelessness has previously been found to be an excellent predictor of suicidal intent in both children who were psychiatric inpatients (Kazdin et al., 1983) and adults (Beck et al., 1975).

Having multiple symptoms among the 20 depressive symptoms that are not clearly prodromata to attempts greatly increased the risk of attempts. In the presence of a single one of these 20 symptoms, the rate of attempts was 4 percent; when the number of

DEPRESSIVE SYMPTOMS AND SUICIDE ATTEMPTS

Preparatory Symptoms	**N**	**Percent Who Attempted**
Thought of suicide	(459)	46
Wanted to die	(378)	40
Thought a lot about death	(701)	23
Other Depressive Symptoms		
Depressed 2 years	(159)	35
Hopeless	(434)	33
Lost all enjoyment	(345)	28
Moved slowly	(143)	28
Felt worthless	(351)	27
Irritable during depressed episode	(498)	26
Work impaired	(427)	24
Thoughts slow	(272)	24
Slept too much	(293)	24
Restless	(194)	23
Lost interest	(405)	23
Insomnia	(467)	21
Crying spells	(555)	21
Withdrew	(562)	21
Low mood	(777)	21
Fatigue	(388)	20
Poor concentration	(451)	19
Poor appetite	(320)	19
Weight loss	(303)	18
Weight gain	(272)	16
Number (Excluding Prep.) Symptoms		**Percent Ever Attempted**
None	(1254)	2
One	(473)	4
Two	(292)	7
3-4	(328)	3
5-8	(331)	22
9+	(113)	46

Table 6.

symptoms experienced reached nine, more than 45 percent of adolescents attempted suicide; when it reached 12, the rate rose to 50 percent.

Although having a large number of depressive symptoms was an excellent predictor of attempts, it by no means accounted for all suicide attempters. However, a cut-off of five depressive symptoms would have identified half (55%) the attempters. This cut-off is associated with a high rate of attempts in all demographic subgroups. Indeed, this level of depressive symptoms in men creates a risk of attempts equal to that in women (27% for males with five or more depressive symptoms vs. 28% for females with five or more depressive symptoms). Among whites, this level of depressive symptoms also removes the effect of age. The effect of ethnicity, however, is not removed in the presence of five or more depressive symptoms. For whites older than 15 with five or more depressive symptoms, the rate of attempts is 37 percent; for blacks older than 15, it is 25 percent; for whites younger than 15, the rate is 36 percent; for blacks younger than 15, it is 17 percent.

Depressive symptoms are clearly an excellent indicator of suicide attempt risk. Nonetheless, use of five or more depressive symptoms as the single criterion would still miss almost half of the attempters. Therefore, it is worth looking for other indicators as well.

Substance Abuse

Alcohol. About half the teenagers interviewed reported having had alcoholic drinks, but few (8%) had become regular drinkers, defined as drinking an average of once a week or more over the last year or having had a sustained period of very heavy drinking in the last year. Regular drinking was a striking predictor of suicide attempts. Among those drinking regularly in the past year, 12 percent had attempted suicide in that period, compared with 3 percent of the remainder. An elevated rate of attempts was associated with regular drinking for each of the sub-populations identified by age, sex, and race. The groups most strikingly affected were the young, whites, and females. Only 17 of the young had been frequent drinkers, but 24 percent of them had attempted suicide in the last year. Among white frequent drinkers, 15 percent had made a recent attempt; among female frequent drinkers, 14 percent had. Among the eight frequent drinkers who were young, white, **and** female, three (38%) had attempted suicide in the last year.

Few of these young people had been drinking long enough to develop drinking problems, but among the 2 percent who in the last year had at least two problems of the kind used to make a diagnosis of alcohol abuse or dependence (e.g., missing school because of drinking, binges, or blackouts), 17 percent had attempted suicide.

Getting drunk was more common than either regular drinking or alcohol problems. Seventeen percent of these young people had been drunk at least once during the preceding year. If they drank without ever getting drunk, the rates of recent attempts were only slightly higher than rates for those who did not drink at all (5% vs. 3%). If they had been drunk once or twice in the last year, 7 percent had recent attempts; among those who got drunk three times or more in the last year, the rate was 13 percent. Almost half (46%) the attempters in the last year had been drunk three or more times that year.

Drugs. One-third of these young people had used marijuana. Use of other illicit drugs was much less common; the next most frequently used drug was amphetamines (7%).

While use of any drug was associated with an increased risk of suicide attempt, the association was particularly strong with the use of drugs other than marijuana (Table 7). The single predictor producing the highest rate of having ever attempted suicide was PCP use; two-thirds (67%) of the 30 PCP users had made a suicide attempt. Rates were also above 40 percent for users of barbiturates (N = 85), hallucinogens (N = 82), and glue (N = 66). (Rates were also very high among the few users of heroin (N = 12) and "T's and blues" (N = 11), but they are omitted from Table 7 because of their small number.)

Weekly use of any drug in the last year was associated with a suicide attempt during that period (13% vs. 3% of the rest of the sample). Drug use of this frequency was associated with elevated rates for each of the demographic subsamples, but particularly among the young. Only 27 of those under 15 had been weekly drug users in the prior year, but 30 percent of them had attempted suicide during that year. Effects of frequent drug use also tended to be greater in whites and girls. Combining these demographic factors, we find that 38 percent of the 13 young white girls who were weekly users had attempted suicide in the last year.

Somatic Symptoms. The interview explored 17 somatic symptoms that could be attributed to physical illness or that might have no physical basis. They included pain in the abdomen, back, joints, limbs, chest, and head; urinary symptoms; fainting; palpitations; dizziness; weight change; menstrual symptoms including excessive pain, excessive bleeding, or irregularity; and more global physical symptoms such as perceiving oneself to be sickly and having to give up activities because of poor health. An abundance of such symptoms without a physical basis (formerly called "hysteria," more recently "somatization disorder") has been reported as associated with suicide attempts in adult women (Schmidt et al., 1954).

While each of the symptoms explored was associated with an increased rate of ever having attempted suicide, for only a few symptoms (joint pain, chest pain, urinary problems, palpitations, dizziness, excessive menstrual bleeding, weight change, and general sickli-

ILLICIT DRUG USE AND SUICIDE ATTEMPTS

	N	Percent Ever Attempting When Any Use of This Drug %
Total Sample	2787	8
No marijuana	1978	4
Marijuana	803	17
Amphetamines	198	27
Cocaine	123	37
Hallucinogens	82	40
Glue	66	42
Barbiturates	85	45
PCP	30	67

	N	Percent Attempting Recently When Drug Taken Frequently This Year %
Total Sample	2798	4
No marijuana	2598	3
Marijuana	183	14
Amphetamines	80	25
Cocaine	63	22
Hallucinogens	47	30
Glue	24	33
Barbiturates	45	36
PCP	21	43

Table 7.

ness or giving up activities) did it seem to matter whether there appeared to be a physical basis for the symptom. Four percent of the sample had at least three somatic symptoms not explained by physical illness. Among these, 25 percent had ever attempted suicide, but they represented only 11 percent of all attempters. Thus, somatic symptoms were associated with suicide attempts, but they were a less powerful risk factor than depression or substance abuse.

Conduct Problems. Respondents were asked whether they had ever done any of 13 acts that are commonly used to make a diagnosis of conduct disorder. The behaviors investigated included disciplinary problems at school that led to expulsion or suspension, stealing, repeated truancy, repeated lying, running away from home, prostitution, fighting, tormenting animals, robbery, arson, vandalism, breaking into locked buildings, and use of weapons. Almost all (85%) of these inner city adolescents had committed at least one of these acts, and three-quarters (76%) had committed one or more of them at least three times. One out of 11 (9%) had done at least four of these acts three times or more.

With each increase in the number of acts carried out repeatedly, the risk of having ever attempted suicide increased (Table 8). Only 2 percent who had committed none of these acts had ever attempted suicide; when four or more acts had been committed repeatedly, the suicide attempt rate was 24 percent. Adolescents with four or more repeated behavior problems accounted for one-quarter of all attempters.

Their higher rate of behavior problems seems to have accounted for the higher rate of suicide attempts in older adolescents. When the number of behavior problems repeated was held constant, the age difference essentially disappeared; with no such repeated behavior problems, the rate of suicide attempts was 1 percent in younger and 2 percent in older adolescents; when there were four or more, the rate of suicide attempts was 22 percent in the younger and 24 percent in the older group. For all demographic subpopulations, attempt rates were elevated when behavior problems were elevated.

Each of these behaviors used as evidence for conduct problems was associated with an increased risk of suicide attempts. Particularly striking was the association with running away from home. Of those who had ever run away, 24 percent had attempted suicide, as had more than a third of those who had run away more than three times and almost half of those who had run away 10 times or more. And among attenders at free clinics, running away is a much more common behavior (18%) than in the general population. Because running away is both common and a potent predictor in this sample, runaways ac-

BEHAVIOR PROBLEMS AND SUICIDE ATTEMPTS

	Proportion Attempting Suicide Ever			
	At Least Once		Three Times or More	
Number of Problems Occurring:	N	%	N	%
None	429	2	670	2
One	551	2	859	4
Two	615	5	676	10
Three	463	9	322	16
Four or more	729	19	260	24

Table 8.

counted for one-third of the suicide attempters. Clearly, when the "street kid" seeks medical care, an important opportunity is presented for suicide attempt prevention.

Depression Combined with Conduct Problems. One of our goals was to learn whether a combination of depression or drug abuse with symptoms typically associated with high impulsivity was a requisite for suicide attempts, or if not, whether this combination greatly increased the risk. To find this out, we looked at rates of attempts in depressives with and without conduct problems, since the latter have been found to be highly related to impulsive behavior.

The results show that a combination of depression with conduct problems of this degree of severity is **not** required, but the effects of conduct problems and depressive symptoms are independent and additive (Table 9). When neither was present at the levels set (three or more depressive symptoms and five or more repeated conduct problems), 3 percent attempted suicide. When conduct problems were present without depression, the rate of attempts was 9 percent. When depression occurred without conduct problems, 20 percent attempted suicide, and finally, when both were present almost half (46%) attempted suicide. Clearly, depressive symptoms are the more potent factor, but the risk is greatly increased if the individual is also impulsive. This pattern held for both boys and girls. For boys the rate of attempts was only 1 percent when neither depressed nor with conduct problems, 4 percent with only conduct problems, 13 percent with only depression, and 50 percent when both occurred. For girls, the comparable figures are 4 percent, 17 percent, 21 percent, and 44 percent. Girls' rates were higher than boys' with either syndrome alone, but girls were less affected than boys by the concurrence of depression and behavior problems.

Given the high suicide attempt rate when depression and conduct problems were both present, it is of interest to see how often they concur. There was a time when it was believed that conduct problems were a "defense against depression," suggesting that their concurrence would be very rare. In fact, this is not the case; they are positively correlated. In nondepressed adolescents, conduct problems of this severity occurred in 2 percent; in depressed adolescents, they occurred in 8 percent. A positive association between depression and conduct problems was found for both boys (5% vs. 16%) and girls (1% vs. 7%), even though base rates of conduct problems are higher in boys and base rates of depression are higher in girls. If adolescents with both syndromes were selected for intervention, 2 percent of the population would enter care and 13 percent of the attempters would be reached.

Life Events

So far, we have considered demographic factors, family factors, and symptoms as predictors of suicide attempts. While these serve as

CONCURRENCE OF DEPRESSION AND BEHAVIOR PROBLEMS IN PREDICTING SUICIDE ATTEMPTS

Depressive Symptoms	Repeated Behavior Problems	Percent Attempting Suicide N	%
0-2	0-4	(1971)	3
	5 or more	(46)	9
3 or more	0-4	(707)	20
	5 or more	(63)	46

Table 9.

the background that provides a vulnerability to attempts, the immediate trigger often appears to be some adverse life event. The events about which we have information include the presence of a chronic illness, being arrested, being jailed, being hurt or threatened, being raped, failing in school, learning that one has a sexually transmitted disease, experiencing a death, and being pregnant.

Because youngsters were asked whether each of these events had occurred within the past year, but not about their previous occurrence, the events could be analyzed as possible causes only of suicide attempts within the past year. Finding that the occurrence of these events in the past year is associated with more attempts in the same time period need not mean, of course, that they triggered the attempt. We do not know whether the event preceded the attempt, but even when it did, both may have been explained by some unidentified earlier determinant. We can come closer to being convinced that the event played a role in the suicide attempt if it was associated with a **first** suicide attempt.

EVENTS IN THE CURRENT YEAR ASSOCIATED WITH RECENT SUICIDE ATTEMPTS

	Any Attempt				First Attempt (of those with no previous attempt)			
	Males		Females		Males		Females	
	N	%	N	%	N	%	N	%
Chronic Illness								
Present	139	5	513	7	131	4	472	6
Absent	498	2	1637	4	492	2	1551	3
Rape								
Present	-	-	2	7	-	-	19	5
Absent	-		2129	4	-	-	2008	4
If attending school								
Failed	53	6	26	10	50	6	113	6
Passed	563	2	132	4	557	2	1736	4
Arrested	66	6	130	15	60	3	117	15
Not arrested	569	2	2013	4	559	2	1903	3
Jailed	28	7	52	25	26	4	43	23
Not jailed	605	2	2088	4	593	2	1975	3
VD	37	5	103	10	37	5	89	7
No VD	591	3	2025	4	577	2	1917	4
Death of someone close	233	3	757	5	225	2	724	4
No death	393	3	363	4	387	3	1275	4
Hurt or threatened	89	11	284	12	84	10	241	11
Not hurt	542	1	1858	3	533	1	1779	3
Event caused PTSD symptoms	37	8	234	14	36	6	204	11
No PTSD symptoms	597	2	1906	3	584	2	1814	3

Table 10.

Results are shown in Table 10 for boys and girls separately with respect to risk of a suicide attempt in the same year as the event and also of a first suicide attempt in that year. Youngsters' first attempts are calculated for those exposed to each event who had no attempt prior to the current year. Rates of first attempts are slightly lower than rates of any attempt in the same year. This should be expected, given our earlier observation that having had a previous attempt increases the risk of a subsequent attempt.

Having someone close to you die was not related to suicide attempts. For girls, there seemed to be little or no effect of being raped or getting pregnant on the rate of subsequent suicide attempts. All other adverse events were associated with some increase in attempts in the past year. Particularly strong relationships were found for being assaulted or threatened. These relationships were found for both boys and girls. The increased risk of suicide attempt associated with being the victim of a physical attack should alert emergency room personnel to offer reassurance that having been battered is no cause for shame or for feeling hopeless about preventing future attacks, and to recommend further care if the young person's reaction appears intractable to such reassurance.

Another type of life event showing a strong association with suicide attempts was trouble with the law. Twelve percent of those arrested and 19 percent of those incarcerated in the last year had attempted suicide. Girls were more vulnerable than boys to contacts with the law. Fifteen percent of girls arrested and 25 percent of those incarcerated in the prior year attempted suicide, compared with 4 percent of the remainder. Although we do not know whether these excess attempts occurred during the period of incarceration, these results suggest that the precautions commonly taken in detention settings to protect males from suicide should probably be extended to females as well.

Putting these Results to Use

We have found that 8 percent of the young persons seen in inner city medical clinics reported having attempted suicide at some time in their lives, 4 percent within the year preceding the interview. Attempts appear to be recurrent, since attempts in the last year were more frequent in those who had made earlier attempts.

We have found a variety of correlates of suicide attempts. They are summarized in Table 11. The proximal depressive symptoms of thoughts about death and thoughts about suicide and the use of exotic drugs are the best single correlates, but there are many others that are also strong.

These correlates can be used as indicators of which clinic patients appear to be at risk of suicide attempts. They may also serve to identify high risk individuals in the general population, although we do not yet know how generalizable our findings are. Nor do we know how well suicide attempts in individuals with a particular set of characteristics can predict actual suicides. Putting these multiple indicators to practical use in clinics requires that clinic personnel have a plan for systematically uncovering their presence in a manner that is not unduly intrusive and that does not require asking an excessive number of questions of those at low risk. In Table 12, we suggest a plan of inquiry that should alert clinic personnel to suicide risk as rapidly and unobtrusively as possible. It begins with information routinely collected at intake, such as the presenting complaint and the people with whom the adolescent lives. It then adds predictors that can be assessed with only a question or two. If used in this clinic sample, these questions would have rapidly identified more than 90 percent of the youngsters in our study who reported to us having attempted suicide. The first positive response would trigger exploration of suicidal ideation, leaving each successive question to be asked of a smaller number of patients. How far down the list of indicators clinic personnel would want to proceed would vary with the facilities for care and the degree to which they felt that the assistance to be offered would actually resolve the youngsters' problems.

The indicators we suggest in Table 12 are not necessarily causes of suicidal behavior, but some of them may be causal. To the extent that they are causal, it should be useful to

GOOD PREDICTORS OF SUICIDE ATTEMPTS IN ADOLESCENT CLINIC PATIENTS

5 + x Population rate	Used barbs, PCP, hallucinogens, T's & blues, glue Wanted to die Thought of suicide
4-5 x Population rate	Depressed 2 years or more Attempt before this year Hopelessness 4 or more family diagnoses Runaway Alcohol problems this year Incarcerated this year Not living with relatives Psychiatric chief complaint
3-4 x Population rate	Relative attempted Specific depressive symptoms ever loss of enjoyment felt slowed down felt worthless irritable 5 or more depressive symptoms Ever incarcerated 3 or more somatic symptoms not medically explained 4 or more behavior problems Fighting at home involving patient this year Has been drunk at least 3 times in the last year Hurt or threatened this year Arrested this year
2-3 x Population rate	White female aged 15-18 Has thought often about death Any depressive symptom ever Ever in trouble with the law Severe poverty 5 or more post-traumatic symptoms

Table 11.

design interventions that would reduce their prevalence. Treating youngsters for depression, helping them to resolve conflicts with family members, encouraging them to stay and work out family problems rather than run away, helping them to reduce their alcohol and drug intake may well be interventions that would also reduce the frequency of suicidal behavior. Other indicators, such as being assaulted or having suicidal family members, may not be possible to eradicate, but it could be useful to warn youngsters that such experiences and family settings put them at risk of harboring suicidal thoughts, and to urge them to seek help should such thoughts appear.

RECOMMENDATIONS

Because suicide attempts frequently precede actual suicides and are, in any case, signals of profound distress, an important intermediate step in preventing youth suicide should be learning what factors were related to suicide attempts and attempting to prevent further attempts.

Adolescent clinic patients are an accessible population for identifying those at risk of suicide attempts. This paper has used such a population to develop a set of markers that

HOW TO IDENTIFY 90 PERCENT OF SUICIDE ATTEMPTERS EFFICIENTLY

	Percent Asked the Question	Percent of Attempters Added if Positive	Cumulative Percent of Attempters Identified
Is presenting complaint psychiatric?	100	11	11
Does R live with no relative or spouse?	95	13	24
Was R drunk 3 times or more last year?	89	17	41
Has R ever runaway from home?	84	25	66
Has R ever used hallucinogens, T's & blues, PCP, barbiturates, or glue?	72	3	69
Did R use illicit drugs most weeks last year?	71	2	71
Has anyone in R's family attempted suicide?	68	5	76
Has R ever had a period of two weeks or more of feeling worthless?	66	7	83
Has R ever been arrested?	60	3	86
Has R ever been beaten or threatened in the last year?	57	3	89
Has R ever had 2 weeks or more of feeling hopeless?	53	2	91

Table 12.

might assist pediatricians, obstetricians, and other medical personnel in clinics to recognize those at risk so that they can be asked about their suicidal ideation and so that interventions can be instituted. While the results provide no direct information about what interventions might work, it is at least worth trying interventions that would lower the risk profile and then evaluating their effectiveness. Likely candidates for interventions would seem to be treatment for depression and substance abuse, efforts to reconcile runaways with their families, and development of crisis centers for youths who are victims or perpetrators of crime. Once interventions have been developed, the following program of intervention and its evaluation should be undertaken:

1. Use the correlates of suicide attempts found in this and other studies to develop a set of indicators of risk that can be used nonintrusively and rapidly with adolescent clinic patients.
2. Encourage the systematic use of these indicators by clinic personnel to select patients for questioning about suicidal ideation. Identification requires direct questioning because youths seldom volunteer their suicidal thoughts in routine clinic visits.
3. Offer youths with high risk profiles interventions that might reduce the prevalence of these indicators. Where reduction is not possible, inform them that they may be at heightened risk for suicide attempts, and advise them to seek services in crisis situations. Provide them a list of sources to contact.
4. Institute prospective studies using followup interviews and searches of death records after instituting the interventions suggested above to compare three groups with respect to their subsequent suicide attempts and completed suicides: (1) youths whose risk profiles remained high despite selection for intervention because of noncompliance with treatment offered or treatment failure, (2) youths for whom intervention succeeded in improving their set of risk indicators, and (3) youths not offered intervention because they were assessed as being at low risk of future attempts. This study will both evaluate the predictive power of the risk profiles and test the effectiveness of the interventions.
5. Use the results of prospective studies such as the one described above to improve the set of indicators and interventions being offered in clinic settings, and repeat the evaluation.
6. When identification has been demonstrated to lead to successful intervention, expand the settings in which identification and subsequent interventions can be carried out. Likely sites include emergency rooms and police stations.

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SUICIDAL IDEATION AND ATTEMPTS: THE EPIDEMIOLOGIC CATCHMENT AREA STUDY

Eve K. Mościcki, Sc.D., M.P.H., Division of Clinical Research, National Institute of Mental Health, Rockville, Maryland

Patrick W. O'Carroll, M.D., M.P.H., Epidemiology Branch, Department of Injury Epidemiology and Control, Center for Environmental Health and Injury Control, Centers for Disease Control, Atlanta, Georgia

Donald S. Rae, M.A., Division of Clinical Research, National Institute of Mental Health, Rockville, Maryland

Alec G. Roy, M.D., Laboratory of Clinical Studies, National Institute of Alcohol Abuse and Alcoholism, Bethesda, Maryland

Ben Z. Locke, M.S.P.H., Division of Clinical Research, National Institute of Mental Health, Rockville, Maryland

Darrel A. Regier, M.D., M.P.H., Division of Clinical Research, National Institute of Mental Health, Rockville, Maryland

ABSTRACT

Data from the five sites of the National Institute of Mental Health Epidemiologic Catchment Area Study were examined for lifetime prevalences of thoughts of death, desire to die, suicidal ideation, and suicide attempts. Of 18,571 adults aged 18 years and older who participated in the study, 21.7 percent reported that there had been a period of 2 weeks or more some time during their lives when they thought about their own or another's death, 7.1 percent reported that they had "felt so low" they wanted to die, 10.2 percent reported that they thought about committing suicide, and 2.9 percent reported that they had attempted suicide at some time in their lives. Females, persons aged 25 to 44 years, separated or divorced persons, whites, and persons with low socioeconomic status were more likely to have either thought of committing suicide or attempted to commit suicide. Persons who had a diagnosis of a psychiatric disorder were more likely to have either thought about suicide or attempted suicide than were persons with no psychiatric diagnosis (odds ratios = 6.0 and 8.4, respectively).

INTRODUCTION

The epidemiology of suicide in the United States has been analyzed in detail for the general population (1-4) and for the nation's youth (1,5-10). These analyses are based on death certificate information and, although the problem of misclassification of suicides is an important one, the descriptive epidemiology of those deaths that are coded as suicides may be considered as descriptive of the entire population and relatively accurate.

The same is not true of suicidal ideation and attempted suicide (parasuicide). Most studies addressing the prevalence or the descriptive epidemiology of suicidal ideation or attempted suicide have been based on limited or special populations, such as all admissions to a particular hospital or specialty service for attempted suicide in a particular time period (11,12). Results from such studies, although extremely useful to the clinician, cannot reliably be generalized to the general population. Random population surveys have often been based on fairly small samples from a single locale.

The available epidemiologic information on the population prevalence of suicidal ideation and attempts comes predominantly from four major surveys conducted in North America (13-16). Paykel and his colleagues (13), in a general population survey of 720 adults from a population of 72,000 in New Haven, Connecticut, reported that 8.2 percent of the respondents answered "yes" to the question, "Have you ever wished you were dead--for instance, that you could go to sleep and never wake up?" However, very different results were reported by Ramsay and Bagley (16) from another population survey in Calgary, Alberta, Canada, in which the question was asked using Paykel's exact wording. Of 679 adults surveyed from a population of 350,000, 32.3 percent reported that they had, at some time in their lives, wished they were dead.

Regarding suicidal ideation, Schwab and his colleagues (14) found that 15.9 percent of 1,645 adults from a random sample of 37,000 households in north Florida reported some degree of suicidal ideation when asked, "How often do you think about suicide? Would you say--never, seldom, sometimes, often, all of the time?" Vandivort and Locke (15) asked a random sample of 3,935 adults from Kansas City, Missouri, and Washington County, Maryland, how often they thought most other people thought about suicide: 18.1 percent of the respondents said "several times a year" and 9.1 percent said at least once a month. Paykel asked about suicidal ideation with two questions of differing intensity: "Have you ever thought of taking your life, even if you would not really do it?" and "Have you ever reached the point where you seriously considered taking your life, or perhaps made plans how you would go about doing it?" In this survey, 4.8 percent of the respondents answered' "yes" to the former question, and 2.6 percent answered "yes" to the latter. Ramsay, using the same two questions as Paykel, reported much higher prevalences of 37.8 percent and 13.4 percent, respectively.

Although very few population surveys have addressed the lifetime prevalence of attempted suicide, those that have been done have generated estimates that are basically of the same order of magnitude--about 1\percent to 4 percent. Paykel found that 1.1 percent of the respondents in his sample reported having, at some point, "made an attempt to take (their) life" (13). Again, Ramsay found a higher lifetime prevalence in his survey (4.2%), using the `same wording as Paykel (16). Schwab found an intermediate lifetime prevalence: 2.7 percent of his sample reported having tried to commit suicide (14).

The crude annual incidence of attempted suicide has been estimated in a number of studies in which various methodologies were used. Weissman (11), in a review of English language studies from 1960 to 1971, reports a range of crude annual incidence rates for suicide attempts from a low of 0.04 percent in New Delhi, India, to a high of 0.73 percent in London, Canada. Again, very few population surveys have addressed this question. Schwab reports an incidence rate of 0.36 percent in his sample (14); Paykel's estimate is somewhat higher, at 0.56 percent (13); and Ramsay's estimate is higher still, at 0.80 percent (16). All three of these incidence rate estimates are of the same order of magnitude. Notably, studies in which general practice physicians were sampled (17) or prospective studies in which multiple sources (including jails) were used (18) have yielded estimates similar to those reported by these population surveys.

For this paper, we present epidemiologic data on the distribution of suicidal ideation and suicide attempts in the general community. We report here the results of interviews with 18,571 adults from five sites, conducted as part of the National Institute of Mental Health Epidemiologic Catchment Area Study.

MATERIALS AND METHODS

Epidemiologic Catchment Area. The Epidemiologic Catchment Area (ECA) Study is a five-site, two-wave community survey of selected mental disorders (19-23). Detailed descriptions of the study design and sampling procedures have been published (19,20,24). Briefly, complex, multistage probability samples of households were drawn in each of the five participating sites of New Haven, Connecticut, Baltimore, Maryland, St. Louis, Missouri, the Piedmont region of North Carolina, and Los Angeles, California. Elderly persons were oversampled in New Haven, Baltimore, and the Piedmont. Blacks were oversampled in St. Louis, and the Baltimore site selected some neighborhoods in the catchment area that were predominantly black. The Los Angeles site selected some neighborhoods in the catchment area that were predominantly Hispanic; most of these residents were Mexican American. In general, one adult was interviewed per household, resulting in more than 3,000 adults 18 years old and older from four sites and more than 5,000 in the New Haven site. An additional 500 subjects were interviewed in institutions. At four sites, respondents were interviewed in the household in two waves, 1 year apart. Respondents in New Haven were interviewed in three waves at 6-month intervals.

Data collection included information on symptoms of affective, anxiety, and schizophrenic disorders, other psychiatric disorders, substance abuse, health service utilization for mental health problems, and sociodemographic characteristics. Diagnoses of selected mental disorders were made on the basis of standardized diagnostic criteria of the American Psychiatric Association (25). These criteria were operationalized in the Diagnostic Interview Schedule (DIS), a highly structured instrument developed specifically for use in community surveys by trained lay interviewers (26,27). Responses regarding the presence or absence of selected symptoms were entered into a computer algorithm that assigned a specific diagnosis to each respondent who met criteria for mental disorders. Although the DIS continues to undergo validity and reliability checks, it is generally considered to be an acceptable instrument for use in community surveys (28-31).

The weighted sociodemographic characteristics of the combined sample by site are shown in Table 1.

Suicidal ideation and suicide attempts. The DIS contains four questions on death and suicide that were asked of each respondent as part of the symptom cluster for diagnosis of major depressive episode:

1) *Has there ever been a period of 2 weeks or more when you thought a lot about death--either your own, someone else's, or death in general?*

2) *Has there ever been a period of 2 weeks or more when you felt like you wanted to die?*

3) *Have you ever felt so low you thought of committing suicide?*

4) *Have you ever attempted suicide?*

Sociodemographic characteristics (% distribution) of respondents, by site
Epidemiologic Catchment Area Study, Wave 1, 1981-1984

Characteristic (n)	Total (18,571)	New Haven (5,034)	Baltimore (3,481)	St. Louis (3,004)	Piedmont, NC (3,921)	Los Angeles (3,131)
Total	100.0	100.0	100.0	100.0	100.0	100.0
Sex						
Male	41.0	41.0	38.0	40.0	39.5	47.3
Female	59.0	59.0	62.0	60.0	60.5	52.7
Age*						
18-24	12.1	8.5	14.5	15.7	9.6	15.3
25-44	35.1	24.4	34.8	41.1	31.4	51.5
45-64	22.0	16.0	24.2	24.0	27.4	20.7
≥ 65	30.7	51.2	26.5	19.2	31.7	12.3
Ethnicity**						
Nonblack/ Non Hispanic	68.8	90.3	65.2	61.0	63.9	51.1
Black	23.4	8.4	34.0	38.5	35.8	4.6
Hispanic	7.8	1.3	0.8	0.5	0.3	44.3
Marital Status						
Married	46.8	49.5	42.2	45.7	51.1	43.3
Never married	20.5	15.7	22.8	22.5	15.3	30.2
Sep./Divorced	14.9	10.3	18.4	18.5	11.6	19.3
Widowed	17.7	24.5	16.4	13.3	22.1	7.2
Socioeconomic status in quartiles						
Lowest	24.3	20.6	30.3	22.7	29.5	18.3
Medium low	33.5	32.9	39.6	35.6	31.1	28.5
Medium high	28.2	30.6	24.9	27.8	26.1	31.2
Highest	14.0	16.0	5.2	13.9	13.2	22.0
Employment status***						
Employed	47.1	38.8	40.0	48.7	46.3	65.4
Not employed	52.9	61.2	60.0	51.3	53.7	34.6
Psychiatric diagnosis (ever in lifetime)						
No	67.1	75.4	61.2	65.4	64.8	64.8
Yes	32.9	24.6	38.8	34.6	35.2	35.2

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* The elderly were oversampled in New Haven, Baltimore, and Piedmont.

** Blacks were oversampled in St. Louis; the Baltimore site selected some neighborhoods in the catchment area that were predominantly black; the Los Angeles site selected some neighborhoods in the catchment area that were predominantly Hispanic

*** "Not employed" includes homemakers; total number not responding to this question = 1,313.

Table 1.

All four questions were asked of each respondent at both the baseline (Wave 1) and followup (Wave 2) interviews. In addition, respondents at three of the five sites (Baltimore, the Piedmont, and Los Angeles) were asked at both interviews about the recency of the symptoms. Suicidal ideation was represented by an affirmative response to Question 3, and suicide attempt was represented by an affirmative response to Question 4.

Analyses. In this paper, we present analyses based on data from the Wave 1 household interview at all sites. All analyses took into account the complex sampling procedures used in the study. The data were weighted by age, sex, and race/ethnicity (black/Hispanic/non-black, non-Hispanic) to standardize the combined five-site population to the United States household population as determined by the 1980 Census (24).Responses to each of the four questions were tabulated by sex, age, race, marital status, socioeconomic status, employment status, site, and psychiatric diagnosis. Weighted prevalence estimates and standard errors were generated by using PROC SESUDAAN (32). Significant differences in bivariate comparisons were determined by using a standard Z-statistic.

Four weighted logistic regression models, one for each death/suicide question, were constructed with SAS PROC LOGIST (33), with sex, age, race, marital status, socioeconomic status, employment status, site, and psychiatric diagnosis as the independent variables. The model parameters produced by PROC LOGIST were then entered into PROC RTILOGIT (34), along with the stratification variables from the sampling design. This procedure made it possible to produce tests of significance of the model parameters by taking into account the complex sampling design of the ECA Study. The overall alpha level was set at 0.05 for each regression analysis. Because the analyses estimated 18 regression coefficients, statistical significance for each was tested at a probability level of 0.0028 (0.05/18), based on the Bonferroni inequality (35). Odds ratios and confidence limits were computed for the variables found to be significant, based on the coefficients and their standard errors derived from PROC RTILOGIT.

RESULTS

Prevalence. Table 2 shows the overall

Weighted prevalence per 100 of thoughts of death, desire to die, suicidal ideation, and suicide attempt, by recency Epidemiologic Catchment Area Study, Wave 1, 1981-1984

Time of occurrence*	Thoughts of death	Desire to die	Suicidal ideation	Suicide attempt
Ever (lifetime)**	22.2	7.2	10.7	2.9
Ever (lifetime)***	20.7	6.7	10.2	3.0
More than 1 year ago***	20.6	6.7	10.1	3.0
Last year***	10.1	2.6	2.6	0.3
Last 6 months***	8.7	2.1	1.8	0.2
Last month***	6.0	1.4	0.8	0.1
Last 2 weeks***	4.6	1.1	0.6	0.1

*Overlapping time categories.
**Includes all five sites.
***Excludes New Haven and St. Louis.

Table 2.

weighted prevalence of thoughts of death, desire to die, suicidal ideation, and suicide attempts by recency. Recency questions were not asked at the Yale and St. Louis sites, and these sites are therefore not represented in the estimates for 1 year, 6 months, 1 month, and 2 weeks. Most suicide ideation experiences and attempts occurred more than a year before the interview. "Thoughts of death" was the most frequently reported outcome, and suicide attempts were the least common outcome. The prevalence of suicidal ideation was higher than the desire to die when respondents reported having experienced this symptom more than 1 year before the interview; the desire to die was more prevalent than suicidal ideation when respondents reported its occurrence within 6 months or less of the interview.

Table 3 shows the weighted prevalence of thoughts of death, desire to die, suicidal ideation, and suicide attempts by sociodemographic characteristics, psychiatric diagnostic status, and site. Standard errors for each estimate appear in parentheses. All four outcomes were significantly more frequent among women and persons with a psychiatric diagnosis. Persons 25 to 44 years of age had significantly greater rates for all four outcomes than did older persons. Persons 18 to 24 years of age had significantly greater rates of thoughts of death, suicidal ideation, and suicide attempts than did persons 45 years of age and older. Non-Hispanic/nonblack (predominantly white) persons had the highest rates of thoughts of death and suicidal ideation, whereas Hispanics had the highest rates of desire to die and suicide attempts. Within marital status categories, separated or divorced persons had significantly higher rates of desire to die, suicidal ideation, and suicide attempts. Thoughts of death were most common among widowed individuals. Persons with higher socioeconomic status had the highest rates of suicidal ideation, but persons with lower socioeconomic status had the highest rates of suicide attempts. Persons not currently employed had higher rates of thoughts of death, desire to die, and suicide attempts. Finally, there was considerable variation in the outcomes by site, with generally lower rates in Baltimore and the Piedmont and highest rates in Los Angeles, particularly for suicidal ideation and suicide attempts.

Because Los Angeles was the only site that sampled a large proportion of Hispanics, it was also necessary to compare the rates for this group with rates for blacks and others (non-Hispanic/nonblack) within Los Angeles. Table 4 shows the results of these rate comparisons. The rates for thoughts of death and desire to die for Hispanics were not significantly different from the rates for blacks and others in Los Angeles, which contrasts with the significantly greater rate for desire to die that was seen in Table 3 when rates were compared by ethnic status across all five sites. Rates of suicidal ideation were not significantly different for Hispanics and blacks in Los Angeles, but the rates for both minority groups were significantly lower than the rates for the non-Hispanic/nonblack group. Similarly, Hispanics did not differ significantly from blacks in the rate of reported suicide attempts, but their reported rates were significantly lower than those reported for non-Hispanics/nonblacks.

Table 5 shows the odds ratios derived from the four logistic regression analyses on thoughts of death, desire to die, suicidal ideation, and suicide attempts. Regardless of outcome, psychiatric diagnosis was the strongest risk factor, followed by female gender. The significantly low odds ratios for persons aged 65 and older indicate that this age group was at lowest risk, with the two youngest age groups (18-24 and 25-44) at increased risk for morbid or suicidal thoughts. Age was not a significant factor for either desire to die or suicide attempts. Non-Hispanics/nonblacks (essentially whites) were at significantly higher risk for suicidal ideation than were either blacks or Hispanics and were at higher risk than blacks for suicide attempts. Widowed marital status was a significant risk factor for thoughts of death and desire to die, but not for the other outcomes. Divorced or separated persons were ap-

Weighted prevalence per 100 (and standard errors) of thoughts of death, desire to die, suicidal ideation, and suicide attempts, by sociodemographic characteristics
Epidemiologic Catchment Area Study, Wave 1, 1981-1984

Characteristic	Thoughts of death	Desire to die	Suicidal ideation	Suicide attempt
Total	22.2 (0.4)	7.2 (0.3)	10.7 (0.3)	2.9 (0.2)
Sex				
Male	17.9 (0.6)	4.7 (0.3)	8.8 (0.4)	1.5 (0.2)
Female	26.1 (0.6)	9.4 (0.4)	12.4 (0.5)	4.2 (0.3)
Age				
18-24	22.8 (1.2)	6.3 (0.6)	12.1 (0.9)	3.4 (0.5)
25-44	24.7 (0.7)	8.4 (0.4)	14.6 (0.5)	4.0 (0.3)
45-64	20.3 (0.9)	6.7 (0.5)	7.8 (0.5)	2.1 (0.3)
≥ 65	18.4 (0.7)	5.7 (0.4)	4.0 (0.4)	1.1 (0.2)
Ethnicity**				
Nonblack/ Non Hispanic	22.6 (0.5)	7.2 (0.3)	11.3 (0.4)	3.0 (0.2)
Black	19.5 (0.8)	5.8 (0.5)	6.8 (0.6)	2.3 (0.3)
Hispanic	19.4 (1.1)	8.5 (0.7)	8.3 (0.9)	3.3 (0.6)
Marital Status				
Married	20.6 (0.5)	5.4 (0.3)	8.4 (0.4)	2.0 (0.2)
Never married	22.4 (1.0)	7.4 (0.6)	13.7 (0.8)	2.9 (0.3)
Sep./Divorced	25.6 (1.1)	14.3 (1.0)	20.9 (1.1)	8.5 (0.8)
Widowed	27.6 (1.1)	9.6 (0.8)	5.5 (0.6)	2.0 (0.4)
SES in quartiles				
Lowest	20.8 (1.0)	8.1 (0.6)	8.5 (0.8)	3.9 (0.6)
Medium low	21.7 (0.8)	7.7 (0.4)	10.4 (0.5)	3.6 (0.3)
Medium high	23.6 (0.8)	7.4 (0.5)	11.1 (0.5)	2.6 (0.3)
Highest	21.6 (1.0)	5.0 (0.6)	11.9 (0.8)	1.5 (0.3)
Employment status				
Employed	21.0 (0.6)	5.8 (0.3)	10.9 (0.4)	2.4 (0.2)
Not employed	23.5 (0.7)	8.6 (0.4)	10.4 (0.5)	3.7 (0.3)
Psychiatric diagnosis (ever in lifetime)				
No	15.7 (0.4)	2.7 (0.2)	4.6 (0.3)	0.8 (0.1)
Yes	37.4 (1.0)	16.5 (0.7)	23.4 (0.7)	7.4 (0.5)
Site				
New Haven	22.9 (0.8)	8.4 (0.5)	10.2 (0.6)	2.4 (0.3)
Baltimore	21.4 (0.9)	6.2 (0.4)	7.6 (0.6)	3.4 (0.4)
St. Louis	23.1 (1.1)	6.5 (0.5)	10.6 (0.7)	3.1 (0.4)
Piedmont, NC	20.4 (0.9)	5.2 (0.6)	10.0 (0.9)	1.5 (0.4)
Los Angeles	21.8 (0.9)	8.5 (0.6)	14.6 (0.7)	4.3 (0.4)

Table 3.

Weighted prevalence per 100 (and standard errors) of thoughts of death, desire to die, suicidal ideation, and suicide attempts, by ethnicity Los Angeles site only, Epidemiologic Catchment Area Study, Wave 1, 1981-1984

	Non-Hispanic/ Non-Black		Black		Hispanic	
Thoughts of death	22.6	(1.1)	20.7	(5.2)	19.2	(1.1)
Desire to die	8.2	(0.7)	8.4	(2.8)	8.7	(0.7)
Suicidal ideation	17.1	(0.8)	11.4	(2.3)	8.2	(1.0)
Suicide attempt	4.6	(0.5)	3.7	(1.6)	3.1	(0.6)

Table 4.

proximately twice as likely to report desire to die, suicidal ideation, or suicide attempts as were married persons. Persons in all marital status categories except married had significantly higher odds ratios for desire to die. The never married were also at increased risk for suicidal ideation. Lower socioeconomic status was a significant risk factor for suicide attempts, but not for the other outcomes. Those persons not currently employed had a significantly higher odds ratio for desire to die, but not for the other outcomes. Finally, there were significant differences between sites for each death/suicide outcome. In general, persons surveyed in Baltimore had lower odds of thoughts of death, desire to die, and suicidal ideation, whereas persons surveyed in Los Angeles had significantly greater odds of suicidal ideation and attempts.

DISCUSSION

Limitations. The data reported here have several limitations that need to be noted. First, the data are based on cross-sectional findings. Although the significant associations between the outcomes and various risk factors are provocative, no conclusions can be drawn with respect to causality. Second, the data were collected from catchment areas in five different communities. Although each sample was population-based, they are representative only of the Catchment Area from which they were drawn. Third, because the ECA Study was not specifically intended to be a survey of morbid or suicidal thoughts and behavior, the outcomes were not clearly defined for the respondent by the interviewer. "Suicide attempt" could thus have been interpreted by the respondent as an act of deliberate self-harm without the intention of dying, a genuine (and failed) attempt to end one's life, or as something else (perhaps an "accident" had been explained to them by a physician that had seen it as an unconscious suicide attempt). Suicidal ideation, similarly, may mean very different things to different people. This issue will be discussed in more detail later. Fourth, the data are based on self-reports, not observations. The ECA Study shares a problem common to all surveys that rely on self-reported data--recall bias (36). Respondents tend to recall events that have occurred recently more readily than they do events that have occurred in the more distant past. Thus lower rates among the elderly could be due to forgetting, differences over time in labeling behaviors, or the results of surveying a population from which those most likely to have attempted suicide had already died (i.e., differential mortality). This is likely since the cumulative lifetime risk of suicide increases with age and some of the suicide attempters in the older age groups may have already committed suicide. Fifth, it was not possible to collect data on other issues previously identified as being related to death/suicide outcomes--for example, the number of attempts, social isolation, method of attempt, or family history of suicide or suicidal behavior. Finally,

Logistic regression analysis: odds ratios for thoughts of death, desire to die, suicidal ideation, and suicide attempt, by psychiatric status and sociodemographic characteristics

Epidemiologic Catchment Area Study, Wave 1, 1981-1984

Characteristic	Thoughts of death	(CIs)*	Desire to die	(CIs)	Suicidal ideation	(CIs)	Suicide attempt	(CIs)
Psychiatric diagnosis	3.56**	(3.05-4.15)	7.04**	(5.34-9.29)	6.03**	(4.86-7.48)	8.43**	(5.27-13.49)
Female	1.76**	(1.50-2.07)	2.42**	(1.83-3.20)	1.89**	(1.51-2.36)	3.29**	(2.11-5.14)
Age								
18-24	1.00		1.00		1.00		1.00	
25-44	1.02	(0.79-1.32)	1.32	(0.94-1.85)	1.24	(0.93-1.66)	1.08	(0.61-1.93)
45-54	0.90	(0.68-1.19)	1.23	(0.81-1.87)	0.84	(0.56-1.18)	0.63	(0.29-1.36)
≥65	0.72**	(0.53-0.99)	0.84	(0.51-1.38)	0.44**	(0.26-0.74)	0.34	(0.11-1.06)
Ethnicity								
Nonblack/Non Hispanic	1.00		1.00		1.00		1.00	
Black	0.82	(0.67-1.00)	0.74	(0.52-1.04)	0.49**	(0.36-0.67)	0.59**	(0.36-0.97)
Hispanic	0.85	(0.65-1.11)	1.04	(0.67-1.62)	0.43**	(0.27-0.68)	0.56	(0.26-1.20)
Marital status								
Married	1.00		1.00		1.00		1.00	
Never married	1.02	(0.83-1.26)	1.44**	(1.01-2.06)	1.57**	(1.17-2.11)	1.13	(0.63-2.01)
Sep./Divorced	1.02	(0.82-1.26)	1.88**	(1.32-2.69)	2.02**	(1.56-2.61)	2.48**	(1.50-4.09)
Widowed	1.65**	(1.28-2.13)	1.84**	(1.19-2.84)	0.97	(0.62-1.51)	1.21	(0.51-2.85)
Socioeconomic status in quartiles								
Lowest	0.75	(0.55-1.02)	1.15	(0.71-1.86)	0.78	(0.48-1.28)	2.24**	(1.01-4.94)
Medium low	0.84	(0.65-1.09)	1.30	(0.86-1.97)	0.85	(0.61-1.19)	2.32**	(1.21-4.45)
Medium high	1.02	(0.79-1.32)	1.35	(0.89-2.05)	0.92	(0.67-1.26)	1.80	(0.96-3.39)
Highest	1.00		1.00		1.00		1.00	
Employment status								
Employed	1.00		1.00		1.00		1.00	
Not employed	1.15	(0.96-1.37)	1.43**	(1.08-1.88)	1.14	(0.89-1.45)	1.51	(1.00-2.28)
Site								
New Haven	1.00		1.00		1.00		1.00	
Baltimore	0.79**	(0.63-0.99)	0.52**	(0.36-0.75)	0.64**	(0.46-0.89)	0.95	(0.54-1.66)
St. Louis	1.03	(0.81-1.31)	0.77	(0.54-1.09)	1.08	(0.79-1.47)	1.18	(0.62-2.23)
Piedmont, NC	0.84	(0.67-1.05)	0.55**	(0.35-0.86)	0.98	(0.66-1.46)	0.58	(0.26-1.27)
Los Angeles	0.93	(0.73-1.18)	0.93	(0.62-1.39)	1.60**	(1.20-2.14)	1.84**	(1.06-3.19)

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* The Bonferroni correction was used to establish a confidence interval of 99.72%.

** $p \leq 0.0028$.

Table 5.

we have no data on completed suicides with respect to antecedent experience of suicidal thoughts and behavior.

Problems with self-definition of suicidal ideation and suicide attempt. As noted previously, some of the variation among different surveys in the prevalence of suicidal ideation may be due to the differing ways in which various investigators asked about this phenomenon; that is, in essence, the definition of "suicidal ideation" varied among the studies. This issue is particularly important for determining the prevalence of attempted suicide. When public health planners consider surveillance for attempted suicide, they often consider emergency medical services (EMS) and emergency rooms as the most likely sources of data; each of these sources sees primarily those attempts associated with relatively serious injury or at least with the perception of serious injury by EMS personnel or the self-admitted patients. However, the respondent in a population survey may have a very different definition that may not necessarily involve injury at all. For example, in a recent survey of a high school population between the ages of 14 and 18 years, 9 percent of the respondents reported that they had made at least one suicide attempt (37). Some portion of this very high prevalence may be due to a liberal definition of "suicide attempt" on the part of the student. This suggestion is supported by the preliminary findings of a survey in another school population in which several students who reported having attempted suicide revealed only vivid suicidal ideation when describing their "attempts" (personal communication).

Prevalence. Very few community surveys of morbid or suicidal thoughts or acts have been done with which the prevalences reported here for thoughts of death, desire to die, thoughts of committing suicide, and suicide attempts might be compared. Those studies that have addressed these issues have frequently asked about morbid and/or suicidal thoughts in different ways, making comparison even more difficult. However, when comparisons are possible, the prevalence rates have generally been of a similar order of magnitude.

In our survey, 10.1 percent of the respondents said that they had, at some time in their lives, "felt so low (they) thought of committing suicide." Other surveys of suicidal ideation have also given prevalences in this range. Schwab's (14) estimate of 15.9 percent is higher than ours possibly because his question presupposes the existence of suicidal ideation, making it somewhat easier for the respondents to report such thoughts. Similarly, Vandivort and Locke's (15) question about suicidal ideation is asked so as to allow for the projection of the respondents' suicidal ideation onto others. Their prevalence estimate of 18.1 percent is also higher than that reported here. Paykel's (13) estimates of 4.8 percent and 2.6 percent are lower than ours, possibly reflecting the increased specificity of his questions. This interpretation is supported by the observation that, in our survey, a higher proportion of respondents reported suicidal ideation (10.1%) than reported having ever wanted to die (7.1%).

Risk factors for suicidal ideation and behavior. The risk factors for suicidal ideation and behavior in our study are similar to those found in the few previous epidemiologic surveys of suicidal feelings. Paykel et al. (13) reported that suicidal feelings of any degree were found significantly more among women and were significantly associated with 23 psychiatric symptoms. When subjects reporting suicidal feelings were compared with nonsuicidal controls, they were significantly more likely to have had a hospital admission in the previous year, to have had a hospital admission for a psychiatric disorder, and to have taken tranquilizers or sleeping pills. The authors considered that these findings probably reflected treatment for a psychiatric disorder related to the suicidal feelings.

Vandivort and Locke (15) also noted, as did Paykel, that individuals reporting suicidal ideation also reported significantly more psychiatric symptomatology. Similarly, Goldberg and Huxley (38) found that suicidal ideation among 18 to 24 year olds was significantly associated with psychiatric symptoms as measured on the Center for Epidemiologic Studies Depression Scale (CES-D) and the Langner 22-Item Mental Health Status Questionnaire.

We found that the lifetime prevalence of suicidal ideation was higher in younger than older age groups. This finding was also reported in previous surveys (14,15). Although only adult populations were surveyed in these studies, there is evidence that the prevalence of suicidal ideation of some degree is also quite high (6%-12%) among children and adolescents (39,40).

In the present study, the significant correlates of attempted suicide were female sex, lower socioeconomic status, a disrupted marital status, and a psychiatric diagnosis, whereas being young was significantly associated with suicidal ideation. These correlates are strikingly similar to those reported from hospital studies of individuals who were admitted for attempted suicide. For example, Weissman (11) reported that the preponderance of female over male attempters was found in all the countries reviewed, that about 50 percent of suicide attempters were under 30 years of age, that age-standardized population comparisons revealed an excess of divorced persons among attempters, that the lower social classes were overrepresented, and that a diagnosis of depression was made in between 35 percent to 79 percent of all attempters. Furthermore, Kreitman (12), reporting on parasuicides admitted to the Regional Poisoning Treatment Centre in Edinburgh between 1962 and 1974, noted that it was the youngest women, the lower social classes, and the divorced who had the highest rates of parasuicide and that past psychiatric care and current psychiatric disorder were found in about 40 percent of suicide attempters.

In general, social risk factors for psychiatric disorders are best identified by population studies that look at population prevalence, rather than clinical studies which examine only treated population prevalence. This type of identification is best because results from clinical studies may reflect differences in the "filters" in the health care system that determine who consults a doctor, whether that doctor refers the patient to a psychiatrist, and whether the psychiatrist admits the patient to a hospital. However, the similarity in the correlates for suicide attempts between the present (and previous) population and clinical studies probably reflects the fact that most individuals in the general population who attempt suicide necessarily come into contact with hospital and psychiatric services (though up to 30% may not) or, those that come into contact with hospital or psychiatric services are representative of the total suicide attempter population (11). Interestingly, when Kreitman compared parasuicides who were and were not admitted to the Edinburgh Regional Poisoning Treatment Centre, he found that the two groups were very similar (12).

Implications of a hierarchical response pattern. Although one might suppose that completed suicides are simply a (fatal) subset of all attempted suicides, it appears that, demographically at least, completed suicides and attempted suicides represent distinct, although overlapping, populations (41). This same issue is relevant for morbid and/or suicidal thoughts and acts. Are these thoughts and acts independent of one another, or is there a stepwise hierarchy of increasingly suicidal thoughts and actions? The series of four questions asked in this survey seems to imply at least the possibility that these phenomena--thoughts of death, desire to die, thoughts of committing suicide, and attempted suicide--lie on a continuum from less serious to more serious and from the "normal" to the pathologic. To some extent, this is supported by our findings. Of those who reported having had thoughts of death, 24.8 percent also reported having wanted to die; 15.5 percent reported also having had thoughts of suicide; and only 5.7 percent reported having attempted suicide. Of those who reported having wanted to die, 57.1 percent reported having had thoughts of suicide and 20.6 percent reported having attempted suicide. Of all those who reported having had thoughts of suicide, 26.9 percent reported having attempted suicide.

This issue appears in a different light when examined from the opposite perspective, however. Of those who reported having attempted suicide, 90.2 percent reported having had thoughts of suicide, but only 54.0 percent reported having wanted to die, and only 43.7 percent reported having had thoughts of death. Of those who reported having had thoughts of committing suicide, 44.7 percent reported having wanted to die and 35.2 percent reported having had thoughts of death. Of those who reported having wanted to die, 72.3 percent reported having had thoughts of death.

There is no simple, consistent, graded relationship between the morbid and suicidal thoughts and acts inquired about in this survey. The most similar populations appear to be those who think about and those who attempt suicide: 90.2 percent of the latter group are contained in the former. However, even here, Schwab reports a very different finding: almost two-thirds of the respondents in his survey who reported having attempted suicide answered "never" to the question, "How often do you think about suicide?" (15).

These proportions have implications for predicting, for example, who is likely to report having attempted suicide. Although 90.2 percent of those who attempt suicide have had thoughts of committing suicide, only 29.9 percent of those who report suicidal ideation will also report a suicide attempt. In fact, this latter proportion is probably an overestimate because suicide attempts might be recalled more easily than suicidal ideation. "Wanting to die" is almost as predictive as having thoughts about committing suicide--that is, 20.6 percent of those reporting they had wanted to die also reported a suicide attempt.

'Of course, these numbers cannot be used to predict who will attempt suicide because they are not prospective. There is no way to determine from these data whether, for instance, the reported suicide attempt came before or after the suicidal ideation or the reported desire to die. We do intend to examine this question in the future, however, using ECA data from the Wave 2 followup. If future studies can demonstrate that responses to questions such as these can indicate which individuals are at high risk for suicide, then they might be used to screen for high-risk individuals (e.g., in the setting of an apparent suicide cluster) so that resources for counseling or other preventive interventions could be appropriately targeted.

Implications for prevention of youth suicides. The findings of this study have implications for preventing youth suicide and parasuicide. First, this survey gives us some idea of what levels of morbid and/or suicidal thoughts might be expected in the general population. Such knowledge may be very useful, for example in investigating apparent clusters of suicide or attempted suicide among teens by providing a baseline against which individual community prevalences may be compared. Second, this survey allows us, for the first time, to reliably estimate the incidence of attempted suicide. In general, 300 per 100,000 persons per year attempt suicide (0.3% in the past year). Third, this survey gives us some ability to direct available prevention resources. Attempted suicide is most prevalent among women, the young, the lower socioeconomic strata, separated or divorced persons, the unemployed, and persons with a psychiatric diagnosis. These risk groups, in general, might be targeted for some sort of screening or intervention. Particular prevention interventions might be targeted toward the young, given that the incidence of attempted suicide is high in this group and that the completed suicide rate has increased dramatically in this population since 1950. Finally and most importantly, this survey generates hypotheses for further research. In particular, the associations noted in this cross-sectional analysis need to be explored to determine whether a positive response to a particular question is in any way predictive of future suicidal behavior. Such a finding would have enormous implications for high-risk individuals.

Areas for further research. This study has highlighted several areas that merit further investigations. First is the need for more detailed analyses of psychiatric status with respect to ideation and attempts. We recognize that there may be a confounding effect between psychiatric diagnosis and suicidal ideation and attempts because these are criteria for some psychiatric diagnoses. We intend to examine this further. In addition, it is likely the relationship between psychiatric status and suicidal ideation and attempts varies by diagnosis. This, too, must be examined in more detail.

A second area that must be explored is the relationship between the dependent variables themselves. In a cross-sectional analysis such as this, which variables are "dependent" and "independent" is decided by the investigator. Indeed, when thoughts of death, desire to die, and suicidal ideation are considered together as independent variables, they are strongly associated with a history of attempted suicide. However, the utility of questions about morbid and/or suicidal thoughts as **predictors** of future suicide or parasuicide remains to be established.

A third area that must be addressed by future studies is a comparison of the general profile derived from psychological autopsies of suicide completers with the profile of suicide attempters. What correlates do these two groups share? In what respects do they differ? Finally, the similarities in the present study among the correlates of the four questions on death and suicide suggest that these questions may be inquiring about phenomena that lie on a continuum, if they do not in fact overlap. Prospective studies are needed in which individuals with and without these risk factors are compared for subsequent suicidal behavior. This is not new; indeed, clinical studies of psychiatric patients have been published (42,43). Followup studies of suicide attempters in the general population, however, remain to be done.

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DEVELOPING A SUICIDE SCREENING INSTRUMENT FOR ADOLESCENTS AND YOUNG ADULTS

Robert I. Yufit, Ph.D., Associate Professor, Department of Psychiatry and Behavioral Sciences, Northwestern University Medical School, Chicago, Illinois

SUMMARY

A major problem in trying to reduce the incidence of suicide is the difficulty in identifying individuals at risk of suicide. In addition, there is the problem of assessing the degree of suicidal risk so that individuals can be directed to appropriate treatments.

Almost all mental health professionals and many other service providers report that they look for indications of suicide risk. Their approach is often informal and subjective, with reliance on clinical experience, judgment and "feel" for the person, to detect warning signs. A more formalized technique for screening would systematize and objectify this task of detection, and likely increase the accuracy of diagnosing suicide risk.

A suicide risk screening instrument constructed from empirical data and utilizing known and presumed correlates of suicidal behavior, would be useful to clinicians involved in screening and assessment. Such an instrument could also educate parents, teachers, and others, to help them recognize the suicide-prone individual.

A Suicide Screening Checklist has been developed and needs to be field-tested to determine its sensitivity and specificity. This instrument would help most clinicians, especially less experienced ones, in their complex task of trying to identify suicidal persons and to assess their suicide risk.

The recorded suicide rate of the adolescent/young adult age range (15-24 years) has increased substantially over the past few decades and now ranks second as a cause of death, with accidents being the number one cause of death in the United States. Many fatal accidents and "accidental" injuries have a sub-intentional self-harm or self-destructive component. Many suicides are unrecorded or misclassified as accidents because of social stigma, hence the total number of suicides far exceeds the recorded rate.

The need to increase accuracy in screening techniques is a vital step towards reducing needless deaths and injury among young people.

Statement of Problem and Definition of Terms

The major task of this paper is to develop a sensitive screening instrument for identifying youth at high risk of suicide. Such a screening instrument does not currently exist in published form. "Screening" means to assess an individual for the purpose of the identification of suicidal potential. Suicidal potential (or suicide risk) refers to the likelihood that such a person will engage in behavior that will directly or indirectly lead to self-destruction. By "sensitive" we mean the capability of the instrument to accurately identify a large proportion of the truly suicidal individuals in the population tested.

An ideal screening instrument should have items that can be quantified, so a total score can be derived, and the degree or severity of suicide risk determined. Establishing severity of risk allows the instrument not only to identify the suicidal person, but also to identify the level of self-destructive intent. The screening instrument's specificity is the degree to which it accurately differentiates those youth not at risk for suicide from those youth who are suicidal.

Such a screening instrument must be broad in scope, to cover the multitude of intentions inherent in suicidal behavior. (Intent may be self-destructive, self-harm, attention seeking, punishment of others, etc.) Yet it must also minimize "false positives," i.e., a score falsely indicating high suicide risk when the person is actually nonsuicidal. These varied objectives make the task of sensitive screening quite difficult, particularly when screening for such a statistically infrequent event. It is likely, for example, that such an instrument may well include the identification of self-harm behavior, as well as self-destructive behavior. This would increase the frequency of identification by at least eight-fold since suicide attempts occur 8 to 20 times as often as suicides. It would be important to be able to detect individuals at risk of suicide attempts, since suicide attempts can have serious, long-lasting sequelae for both the attempter and family members, in addition to the often permanent physical injury to the attempter. Equally important, self-harmful behavior is often a precursor for subsequent, more lethal attempts (1). Thus, while the major aim is to identify individuals at high risk for self-destructive behavior, a good screening technique should also identify those at risk for suicide attempts (2,3).

Some claim they can accomplish this task of identifying suicidal persons by using interview questions. If we can identify degree of suicide risk from several interview questions, why do we need a screening instrument? For one thing, such identification is bound to be highly subjective, and a more formal screening instrument is necessary to establish--in a more comprehensive, sensitive, focused, and specific manner--the criterion validity of the identification variable (1).

Most clinicians working with latently suicidal young people continuously complain that one of their most exasperating challenges is being able to identify accurately suspected suicidal potential, as well as to assess its degree of risk. Failure to accomplish this task creates more anxiety in clinicians than any other diagnostic challenge in behavioral assessment, as it is the only area in mental health which deals with a life and death issue (4,5,6).

Because of the complexity of the behavior that we are screening, we may well need to develop a multi-level, screening procedure, in which the initial screening instrument will be a first stage, and may yield results that indicate a need for further assessment. Thus, initial screening may be followed by a second stage, using even more precisely-focused assessment instruments.

Such sequential screening should especially help reduce false negatives (a score falsely indicating low suicide risk when a person is actually a high risk suicide), and false positives. These incorrect classifications often occur as a function of an intent to manipulate, i.e., to try to create an image of being highly suicidal, or of using extensive denial to hide suicidal intent. The degree of validity of the instrument may also play a role in this problem.

Another major purpose of such a screening instrument is to allow earlier detection, diagnosis, and treatment and thereby serve to prevent suicidal ideation or threats from turning into actual, overt behavior. Early intervention and appropriate treatment could reduce the likelihood of immediate suicidal behavior and allow youth to develop more constructive coping skills to deal with stress, minimizing suicidal urges as problemsolving behavior.

A final purpose in developing such a screening instrument is to give more structure to the education and training of professional and paraprofessional personnel in suicide centers, crisis "hotlines," hospital emergency rooms; to psychotherapists and school counselors; to personnel in school nursing offices; and to persons in other evaluation and treatment environments. The screening instrument will help to focus their attention on areas known to be correlated with suicidal behavior.

A screening instrument will supplement clinical judgment and provide a more comprehensive approach to assessment. This is an added rationale for developing such a screening device, since the complexity of the task is obvious, and the varying clinical skill levels of persons involved in this assessment task are considerable.

The screening instrument will be aimed at the age group under 24, but different parallel forms may be needed for children (up to 15 years) and adolescents/young adults (15-24 years), because some correlates of suicide in younger age ranges have been found to be different from those of adolescents and young adults (2).

This proposal will emphasize developing an adolescent/young adult screening form, a more immediately needed instrument, since the current recorded suicide rate for that 15 to 24 year old group is ten times higher than the 10 to 14 year old age group (3), and currently ranks second as a cause of death in the United States, even though many suicides are not recorded as such (3).

Requirement for a Screening Instrument

The development of a screening instrument must meet several practical criteria in addition to being valid and reliable. It must be easy to administer by a wide variety of personnel, whose clinical training will vary widely. It must be usable by the school counselor or nurse, emergency room staff, the volunteer crisis worker, and the more specifically trained mental health professional. It must be relatively easy to score objectively and to be interpreted meaningfully. Techniques for quantifying responses need to be established with as much empirical support as possible. These tasks all need to be accomplished in a relatively short period of time, since decisions of disposition often need to be made quickly.

Brevity in administration and interpretation is also vital for purposes of readministration to evaluate change. Thus, the screening instrument should focus on the current condition of the person, to establish a baseline for evaluating suicide risk at a subsequent time.

The screening instrument should allow a less experienced clinician to make a more accurate and rapid diagnosis and decision about the nature of the intervention and subsequent treatment. Increasing the accuracy of such a critical task will be more cost-effective in saving of lives and reducing injury from suicide attempts, as well as lessening the frequency of unnecessary costly hospitalizations.

Suicide screening techniques can have a strong public health/mental health impact, by offering a more structured screening (identification) procedure to deal with the widespread problem of youth suicide.

Such suicide screening instruments can also provide more structure to education and training programs; by increasing the effectiveness of clinical services and by lessening inaccurate assessments and diagnoses, they can increase the cost-effectiveness of mental health care.

The less experienced clinician or paraprofessional would have their screening and diagnostic skills enhanced, although care must be taken to conceive of the screening instrument as an effort to organize and supplement clinical judgment, not substitute for it. Thus, a high score on the screening instrument, meaning high suicide potential, is a vital guideline, to be incorporated into one's clinical judgment, to help decide what kind of intervention and subsequent treatment is needed. As such, the highly experienced clinician's ambivalence in using such a screening instrument, should be reduced.

The added structure of having more effective screening and assessment tools should also significantly upgrade and expand the delivery of more accurate and broadly available diagnostic and treatment services. Hopefully, such advancement will encourage private business and philanthropy to view this new screening technique as progress, and, consequently, encourage a higher level of financial support, to facilitate the much needed longitudinal, followup studies.

Since no published youth suicide screening assessment instrument currently exists, studies of adult suicidal persons were surveyed to collect a series of empirically-derived variables that have been found to correlate highly with suicidal behavior. In addition, the clinical experiences of seasoned clinicians who work with suicidal young people have also been translated into variables, and incorporated into the proposed screening instrument. A comprehensive approach must not only identify psychological variables that correlate highly with overt suicidal behavior, but also must identify and include other significant parameters, such as age, sex, physical and mental health, prior suicidal history, peer, family and school environments, and socioeconomic factors.

The initial screening instrument likely will be lengthy and therefore cumbersome, but it could be refined by extensive field testing with clinical and nonclinical (control) populations. Such testing could be implemented in collaborative research projects to assure samples large enough to evaluate the short term predictive validity of suicidal behavior.

To actually develop the screening instrument, we have formed a Test Development Team (TDT), of five highly experienced clinicians who have worked extensively with suicidal children and young adults. This Team contributes variables, based on their clinical experiences, which they feel correlate highly with suicidal behavior. Those variables having the strongest consensus are incorporated into the initial version of the screening instrument. This procedure has been piloted, with success, in developing suicide assessment measures with adult populations (4).

Adequacy of Data Base

The empirical data currently available as a basis for designing a screening instrument have numerous serious flaws. Most studies have failed to separate persons who actually intended to commit suicide from those who were only seeking attention or only seeking to hurt, but not kill, themselves. Such research studies fail to distinguish between persons at low risk for suicide and those at high risk.

Lack of attention to providing more careful definitions of risk in a defined suicidal population has impaired the adequacy of data in many published studies. A careful definition of terms and selection of populations can help to deal with this issue and refine the meaning of research data.

It would also be highly desirable, for purposes of future research, to develop and use a more refined nomenclature of suicidal behavior, to distinguish among varying degrees of intentionality more precisely (e.g., self-harmful versus self-destructive). Previous attempts at such classification have been lacking in clinical relevance.

A focused interview (i.e., eliciting data in specific areas) with the suicidal person is necessary to obtain many categories of reliable data. With younger children this task may be especially difficult, and data from parents and/or siblings will have to be utilized. Data are often inadequate because of incomplete interview procedures. The reported low suicide incidence level of very young children (below 10 years of age) will probably require different screening procedures, hence our initial focus on the 15 to 24 year age group. Suicides at the very young age range are underreported, because many States do not even have a suicide category for cause of death in the under-10 age range.

Most of the literature cited does not define degree of severity of the suicide attempt or injurious behavior which is related to risk. The need for quantification of relevant variables is a key factor and total score of a screening instrument should reflect severity. "Middle range" scores are often ambiguous in their meaning.

Another inadequacy of the research surveyed is distinction of "long term" vs. "short term" risk potential. By short term we mean immediate or in the next few days. How can we distinguish immediate and chronic or long term suicidal tendencies? An accurate suicide/accident history and careful delineation of the duration of the current crisis should provide adequate data for determining chronicity. Self-abusive lifestyles and indirect self-destructive behavior (e.g., long term, severe eating disorders, "accident" proneness, refusing life-sustaining medication, etc.) are indications of longer-term risks. We need to collect data pertinent to both kinds of risk. Many so-called "accidents" (the leading cause of death among adolescents) are clearly subintentional self-injury or self-destructive in intent. Much suicide-prone behavior is lost in research data that does not properly examine such behaviors. Short term or immediate risk is usually addressed more easily in existing research but is often not defined adequately.

Adequacy of data also can be affected by the degree of interactional rapport attained in the individual interviews. The fullness of cooperation and involvement of the interview or test responses, the degree of confidence regarding the candidness and the honesty, or the degree of manipulation of the respondent--these elements have rarely been addressed and are especially important with children and adolescents, who may be trying to make a certain impression. One procedure to evaluate manipulation is to establish "too high" or "too low" cut-off scores, which indicate attempts at trying to "create an image." A lie scale, based on a set of a pattern of responses to specific items, has been found useful in other assessment devices, but not incorporated in existing suicidal assessment techniques. Such a lie scale would help minimize the false positives and false negatives, i.e., the person who wants to create an image of being suicidal but actually is not, or the one who tries to hide or deny suicidal intent. This is a requirement to develop an adequate data base and to ascertain predictive validity.

Adequate test-retest procedures, to establish reliability and record change over longer durations of time, are vital to evaluate these important issues; however, such procedures are rarely addressed in the literature.

The often subjective sources of data being incorporated, i.e., self-report data vs. clinical inference data, must be kept in mind in examining the results and in interpreting research findings.

Another shortcoming that affects previous studies is the lack of followup studies to ascertain both criterion and predictive validity. Such studies are of critical importance.

All these factors affect the adequacy of research data, and we must employ a step-by-step assessment procedure to incorporate techniques to correct, or, at least, more stringently limit these defects.

Incorporating these various techniques and considerations into our screening methods is important. If these features cannot be incorporated in a single primary instrument, then a "sequential screening process," can be used to funnel our identification of the suicidal person, and an assessment of the degree of risk to a high level of accuracy, preferably no more than 20 percent false positive or false negative, a percentage of error which is considered reasonable (1,5) given the complexity of the task.

First, however, we should detail an initial method to construct a primary suicide screening technique.

Construction of a Screening Instrument

The compilation of a series of specific variables could be most simply set forth in the format of a Suicide Screening Checklist (SSC). Such an instrument would be utilized by the clinician or interviewer, indicating presence or absence of the variable, on the basis of interview data from the patient and/or relatives. In some instances, hopefully infrequent, certain interview data would have to be subjectively inferred, rather than objectively tabulated, such as some of the psychological variables (e.g., mistrust, despair, hopelessness, etc.).

At this stage in developing a screening technique it is reasonable to ask only those questions that can be answered "yes" or "no," and avoid questions that would require specifying a degree of severity. Such a Checklist would be easier to administer and complete. Also, severity could be measured by the total score. The indication of a level of confidence in the task, by the clinician, helps evaluate the degree of certainty in responding to each of the items.

The degree to which a variable derived from empirical studies (and from a consensus of clinical experiences of our Test Development Team) is consistently found to be a strong correlate of suicidal behavior, is used as a basis to assign a weight (or a multiplier) to each item in the Checklist, inasmuch as some variables are determined to be more consistent, and deserve a higher valence, than others. Such weights are further evaluated for their power to differentiate suicidal from nonsuicidal persons in the field testing phase, and revised on the basis of their relative contributions to the suicide potential, based on followup study.

Assessing the predictive validity would require following the tested persons for a long period, following a population large enough to have an adequate number of persons who tested positive, and evaluating the effect of any treatment given.

A lengthy followup period of at least two years is needed. Long term risks are covered by this time span (1). Such followup also helps to ascertain the adequacy of the intervention and treatment methods used. It is also desirable to follow those persons whose screening scores indicated low suicidal potential, for comparative purposes, as another form of a control group.

Large-scale, collaborative studies, using known high-risk population samples, helps ensure a relatively more homogeneous group with a sufficiently high incidence of highly lethal suicidal behavior, and permit a sufficient number of evaluations to allow refinements of our assessment technique(s). Classification of intention needs to be defined for each person (e.g., attention seeking, self-harm, hurting others, self-destruction).

In seeking high-risk samples, one might look for communities at higher than average risk, such as those hit hard by unemployment, or where a suicide had occurred in a defined school district since "contagion" may play a role in increasing the risk other youth face (2). High risk samples are also likely where known smaller-scale family stresses were ongoing (school failure, serious illness, death/divorce in family, history of drinking or other drug usage, poor impulse control, criminal record, irreversible loss, etc.). Examination of previous collaborative studies (8), employment statistics, and contacts with local school counselors helps secure such data.

With over more than a thousand members in the American Association of Suicidology (AAS), and their respective individual clinical affiliations, it is possible to enlist aid from a few dozen of such affiliations, to accomplish a collaborative endeavor, even though AAS is not primarily a research organization. (As a chairperson of the AAS Risk Assessment Committee, this writer can facilitate such cooperation and subsequent collaboration.)

Literature Survey

There have been no defined assessment or screening instruments published whose focus was in the cited age range of 24 and under.

There have been some unpublished children's rating scales developed, but these mainly measured depression, not suicide. Since many suicidal persons, especially in younger age ranges, are suicidal without being depressed, it is important not to rely on scales of depression to evaluate suicide risk. An example of one such scale is by Poznanski (9), but it has only a few items that relate to suicide.

A suicide scale for adolescents has been developed very recently by G. Val (10), but it has not been extensively field-tested, nor has there been any criterion validation of its items. The items aim at the adolescent age range and elicit information about suicide ideation, feelings and intent.

A number of adult suicide assessment techniques have been developed, but most of these techniques have lower age limits of 18 or 21, so they can be considered to relate only to part of the age range in question. Also, the test items in these techniques have not been constructed with a younger age range in mind. But more important to our objectives, none of these instruments have been aimed at screening per se. These instruments are aimed primarily at assessing severity of known suicidal persons and not at identification of latently suicidal persons.

Tuckman and Youngman (11) have found 14 factors that differentiate clearly between suicidal high risk and low risk categories. Among the most discriminating factors were living arrangements (living alone) and demographic variables (divorced, unemployed).

Cohn, Motto and Seiden (12) found 19 of 22 demographic factors to distinguish low and high risk suicidal persons, many of these similar demographic factors defined by Tuckman and Youngman (age, marital status, and sex).

An earlier effort to assess immediate and long-range self-destructive personality is reported by Litman and Farberow (13), as well as Tabachnick and Farberow (14).

McNeal and Johnston (15) surveyed existing paper-and-pencil tests, concluding that such techniques have yet to improve on frequently used clinical signs of suicide.

Miskimins and Wilson (16) developed a suicide potential scale consisting of 23 demographic and personality items from psychiatric inpatients who committed suicide, a modest predecessor to the more extensive study by Motto, who most recently developed a clinical risk inventory of suicidal correlates derived from a large sample of adults who committed suicide (17). Both these studies have a high value in terms of consistently identifying common correlates of suicidal behavior.

Clinical scales and schedules, almost always aimed at assessing suicide risk in adults, have been developed over the years by numerous additional investigators (Los Angeles Suicide Prevention Center (18), Zung (19), Beck (20), Cull (21), Diggory (22), and others). Some have selected a specific dimension, such as time perspective, and have developed an assessment tool around the specific concept (Yufit, 23; Melges, 24). Others have used style, such as rigidity in thinking (Neuringer, 25) and problemsolving, or have incorporated suicide rates within the context of other widely used techniques, such as the Rorschach (26,27,28,29) and the MMPI (30). These latter techniques are too elaborate in administration, scoring and interpretation and too nonspecific in spite of special internal "suicide scales" which often give false negative results.

Robins (31) compiled guidelines to help clinicians recognize suicide potential, emphasizing the diagnosis of chronic alcoholism as being prevalent in her study of completed suicides. This study has high value, as alcoholism in the family or in the suicidal person is a frequent correlate but not a causal factor for suicide.

Hendin's study in Scandinavia (32) has cited as important such developmental practices as child-rearing techniques, guilt and dependency producing behavior, and achievement values instilled by parents.

Early loss of an important love object as a precursor to later suicidal behavior has been a finding in a number of studies (33,34,35) and also may be an important etiological factor.

In an ongoing collaborative study on depression, Fawcett and colleagues (36) have found hopelessness, inability to have fun, and not having a sibling under 18 living in the household as correlates of suicidal behavior.

Findings and Proposal

At this point, the surveyed literature does not promote any solution to the problem of developing a usable screening or assessment technique for young people. Nor has any one assessment technique for evaluating adult suicidal persons met the criteria of sensitivity, specificity and severity, and therefore has not been given widespread recognition or acceptability (37,38).

The research findings thus far published have been inconclusive, although some promising starts have been made. We are going to use the findings with highest consensus of specific variables, based on surveyed research, and develop our screening technique using these empirical findings, plus our own combined clinical experiences derived from the consensus of experienced suicidologists (4).

A proposed paper screening instrument for assessing high risk suicidal behavior in young people could well take the format listed below. A focused clinical interview is used to provide the data. Many items have a provisional "weight" assigned, as discussed. These weighted items (or individual multipliers) are added to the total score as being proportionally more important in the screening task, based on the level of consensus from surveyed research and clinical consensus.

The clustering of certain weighted items will serve as a more comprehensive multiplier of risk potential, and will thereby heighten suicide risk when data to support such a cluster of items are present. The assignment of weights, which give a proportional aspect of each item to the total score, is also a form of a concentrator, and the presence of a positive response to such a series of clusters of these weighted items, significantly increased the risk factor of suicidal behavior (1,5).

Thus the total score of the SSC is not the only avenue of interpretation. Subscores, based on weighted item clusters, provide added information. It may be possible, pending subsequent refinement of the screening instrument, to condense the SSC to the most significant of these clusters.

This Screening Checklist is completed mainly on the basis of a focused clinical interview. Other available sources (family, friends accompanying the patient, previous school or hospital records and tests) should also be utilized, in making every attempt to complete the Checklist with a broad spectrum of data and thereby with as much certainty as possible. When data are conflicting, such as parents indicating suicidal concern about their suicidal child, who in turn denies such feelings, the overall comprehensiveness of the score of the multidimensional screening instrument, plus one's clinical judgment, should provide more of an objective "answer," than current more subjective, less comprehensive methods allow.

The sequential process in screening in a clinical setting could take the following steps. If clinical judgment should conflict with SSC score, use secondary screening indicated below. For a research setting, the ultimate decision will be made by the primary caretaker, and recommendation based on findings should be made accordingly.

1. Referral of troubled person.
2. Interview, using SSC (consult other records, significant others, when available).
3. Score SSC using above resources.
4. Indicate level of confidence.
5. Interpret data--using total score and significant item clusters with high weights.
6. If high score with high confidence (i.e., high suicide risk), make decision to hospitalize.
7. If low score (i.e., low suicide risk) with high confidence rating, consider discharge from immediate intervention procedure; follow with recommendation to school counselor or involvement in outpatient psychotherapy. Followup to determine if recommendation was actually implemented.
8. If low score with low confidence rating, use secondary screening instruments, which could include existing adult suicide assessment techniques (some need to be modified for adolescents), such as Beck's SIS Time Questionnaire, or Actual/Ideal

Q-sort technique*. These kinds of supplementary techniques should provide additional data to assist decisionmaking (especially about the need for hospitalization).

9. If high score with low confidence rating, examine weighted clusters of items. If most of these are positive, consider hospitalization to allow more extended evaluation.
10. Scores in middle ranges will need secondary assessment level techniques. Examine weighted clusters for added information.

A Proposed Screening Instrument

The SSC that follows will be accompanied by a Manual of Directions to facilitate scoring and interpretation. A brief version of such a manual is included in the Appendix. Field testing should verify whether the specific clusters of items, scored as currently existing, are to be considered special danger signs in the suicide screening process. If these empirically derived clusters are positive, they should correlate with a high total score and subsequent suicidal behavior to ascertain the sensitivity of the instrument and establish criterion validity. These independent criteria need to be established in initial pilot studies since the existing literature has not provided consistent support for these criteria.

The SSC is to be used by trained mental health professionals or volunteers who have been trained by mental health professionals, such as State-licensed clinical psychologists, psychiatrists, school counselors, nurses, or social workers. Ideally, the persons using the SSC should have formal college courses in interview techniques, individual supervision in establishing rapport, and in data interpretation. Psychologists who have had formal testing supervision in APA-approved internships would be the best qualified to score and interpret the response patterns. A work setting formally certified by the American Association of Suicidology would be an optimal level of accreditation. Training programs at suicide prevention centers that have been so accredited by AAS offer the ideal context for the training of volunteers and professionals.

There is still another advantage to using such screening procedures.

Such screening procedures are likely to lessen liability claims. Even if such procedures should occasionally provide misleading results, their usage reflects the intent of the clinician to apply the most systematic, research-supported procedures currently available. Courts look favorably on such efforts, and negligence based on not using supplementary technique assessment is less likely to be an issue.

One dimension not yet included in the SSC is biological in content. For example, there is evidence that specific CSF metabolites may change in proportion when suicide potential is high. The possibility of affective change, such as depression or anger, may affect the metabolites.

The work of Traskman and associates (43) on a serotonin metabolite (5-HIAA) and by Bunney and Fawcett (44) on 17 OHCS could add another dimension to screening for suicide potential, and make the SSC an even more broadly conceived multidimensional instrument. Similar biological correlates might be added to the demographic, psychological, medical, sociological, environmental, and historical correlates. At this time, however, the biological findings are too provisional to be formally included, and their practicality as a screening measure, especially for younger persons, would pose some medical problems. For example, testing CSF for serotonin would entail a costly and risky test--a spinal tap--to obtain a specimen from each person.

The SSC begins with more empirical demographic/historical/ epidemiological components that have been deemed important (3,45). A continuum of decreasing objectivity is found in subsequent SSC sections. The rationale for including each of the items is based on the accumulated consensus of empirical research support and the consensus of experienced clinicians. Theory also serves as a source for items.

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* Beck's instrument taps degree of suicidal ideation (39). The Time Questionnaire gives time profiles that differentiate suicidal persons from nonsuicidal persons (40,41). The Q-sort is a self-descriptive sorting of descriptive statements on a defined continuum to indicate self-perception of current (actual) self and hoped for, idealized self. The two Q-sorts are inter-correlated to give an indication of congruence (4,42).

One of the items (#39-belonging) is related to this writer's theoretical notion of underlying psychodynamics of suicide (48). Erik Erikson's eight stages framework (49) also serves as a theoretical framework for several items, as does the work of Farber (50).

Each item weighted by a "2" has been cited by more than one research study. A weighting of "3" has been cited by more than one study, plus consensus of our TDT. Weightings of "4" are items which are supported by at least three research studies and consensual clinical experiences. Item clusters with extra weighting are emphasizing both research and strong consensus by clinicians regarding the combined relevance of several variables as a cluster correlate of suicidal behavior. These clusters receive these extra weightings proportional to the more extensive research and experiential empirical support.

The result of these efforts is the Suicide Screening Checklist which follows in the appendix.

Further Considerations

We are trying to assess a complex behavioral syndrome/level of ideation which has a potential death consequence.

The use of the proposed Suicide Screening Checklist could improve screening and assessment efforts by helping to objectify, systematize and focus the highly subjective, idiosyncratic, inconsistent, and often vague evaluation methods currently in use.

The SSC will have to undergo a series of revisions to increase its power to make consistently accurate differentiations among suicidal and nonsuicidal persons. Cut-off score ranges need to be empirically evaluated, primarily by followup studies.

The immediate implementation of the SSC, even in a relatively crude present form, should help both the experienced and, especially, the inexperienced clinician, in the task of identifying and assessing suicide potential.

Experienced clinicians may be reluctant to use such screening techniques. A survey, undertaken by the Health and Human Services Office of Analysis and Inspections, indicates that many experienced clinicians tend to rely only on their clinical judgment as a primary source of decisionmaking (51). The survey by HHS reveals that 42 percent of 268 health care providers surveyed expressed interest and would use such' a screening tool (51). Another 42 percent indicated "maybe" to usage. There was strong consensus that such screening instruments would be very helpful in training, and also be especially useful to less clinically experienced personnel.

Accurate identification of suicidal persons more likely to be accomplished by the use of the SSC, than the equally important task of risk assessment, which will require field testing to establish empirically derived cut-off scores. Persons who reveal an over-indulgence and/or neglect in everyday abusive living styles, which clearly indicate an indirect self-harm or self-destructive consequence (extreme eating disorders, heavy drug usage, high accident rate), should also be evaluated by the SSC, to determine its ability to discriminate the truly self-destructive from those who intend to injure (or punish) themselves via abusive lifestyles.

To the degree that we can have sufficient field testing of the SSC, to establish valid cut-off scores, and evaluate the value of the weighted clusters of items, we can move towards a valid, reliable assessment of risk. The effectiveness of this test must await long term followup studies. This screening instrument could be of value in three ways:

1. Allow us to concentrate treatment resources on those at highest risk
2. Permit earlier intervention
3. Teach healthcare providers what to look for

The greater confidence level of the health care provider, on the basis of being able to use a more systematic approach, may also improve the entire diagnostic screening/intervention/treatment process.

Recommendations

The following recommendations should be implemented as soon as possible, to meet the rising incidence of suicide in the young.

1. Develop the proposed Suicide Screening Checklist to deal with the immediate problem of identifying high risk youth suicide potential. The SSC will complement and improve the validity of clinical judgment. Apply the SSC in a pilot study format of collaborative projects: a series of extensive field tests with high risk, low risk suicide, and nonclinical (control) populations. Train relevant personnel in the use of the screening instrument, scoring and interpretation.
2. Revise the SSC after field testing on appropriate populations. Re-administer SSC to comparative clinical and control populations for further fine tuning. The refined instrument should aim to be sensitive, specific, and be able to assess severity. It should not be too time-consuming or expensive to administer, score, and interpret. Decide whether "sequential screening" or a "screening battery" may be necessary, if a single procedure is not accurately identifying a large majority (80%) of high risk suicidal young persons. Determine whether parallel forms will be needed for children (below 15 years of age), and for adolescents and young adults (15-24 years).
3. Conduct intermediate (2 year) and long term followup studies. We need re-administration of SSC and other developed instruments, to further evaluate predictive and criterion validity as well as reliability. The SSC must have valid items and cut-off scores to assess severity and aid decisions about intervention and treatment.
4. Introduce the SSC into education and training programs in schools, community clinics, crisis centers, hospital emergency rooms, and any setting where known or suspected suicidal young persons may be present. Give special emphasis to education program for parents and teachers, using the SSC as a context of "what to look for" in assessing potential self-destructive behavior.
5. Study control groups of nonsuicidal children, adolescents, and young adults to determine how they cope and adapt to change. This is especially important to explore effects of unexpected negative change to ongoing stress, and how much importance needs to be given to the respective value of internal mechanisms of defense, as compared with external support systems.

   Whatever adaptive modes of coping can be identified should be defined, and attempts made to develop such coping strategies in suicide-prone young people, via their therapy and other treatment programs. Low scoring persons on the screening might also serve as another level of such a control group.
6. These recommendations should be undertaken as soon as possible. Funding should be made available to field test screening instruments such as the SSC and others which may be in the process of development, such as those cited on the HHS Survey (51). With collaborative studies, such field testing can be completed in a year or less. The followup studies could continue as revisions on the screening technique are made and further field testing is done.
7. Parents and teachers must be educated, if we are to create a better milieu and more awareness of this problem. We need to reduce the social and personal stigma of suicide, and also teach parents, teachers, and students to recognize the danger signals. Screening instruments can provide guidelines to such danger signals. Adequate screening gives the mental health clinician or trained volunteer a chance to

identify suicide-prone persons and facilitate prompt intervention to reduce suicide intent and to help develop the desire to live.

8. Enlist the involvement of several institutions to collect a large data base more rapidly. AAS can be of help in this task.
9. These recommendations should be implemented now for the purpose of allowing more accurate and effective screening, intervention, and subsequent treatment of our suicidal youth, thereby lowering the incidence level of completed and attempted suicides, reducing injuries, saving lives, and reducing the suffering of survivors.

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APPENDIX: An Example of a Screening Instrument

Suicide Screening Checklist (SSC) for Adolescents and Young Adults

	Yes	No	Uncertain
Suicide history: (max. = 18)			
1. Prior attempt			
2. 2 or more prior attempts in past year (highly lethal = x 2)			
3. Prior suicide threats, ideation			
4. Suicidal attempts in family (X 2)			
5. Completed attempts in family (X 3)			
6. Current suicidal preoccupation, threats, attempt (X 2); detailed, highly lethal* plan (X 2); access to weapon, medication in home (X 4); all three 'yes' = 8			
7. Preoccupation with death			
Psychiatric History: (11)			
8. Psychosis and hospitalization (X 3)			
9. Diagnosis of schizophrenia or manic depressive illness (X 3)			
10. Poor impulse control (current = X 3)			
11. Explosive rage episodes (underline: chronic, single, recent, single past)			
12. Accident-proneness (frequency, examples)			
School (when relevant): -(9)			
13. Grade failure			
14. Rejection			
15. Poor social relations			
16. On probation or dropped out of school (X 2)			
17. Disciplinary crisis (X 2)			
18. Anticipation of severe punishment			
19. Unwanted change of schools			
Family: (27)			
20. Recent major negative change, usually a loss (death, divorce, serious health problem); (irreversible loss = X 3; divorce = X 3; both 'yes' = X 6)			
21. Loss of emotional support, estranged; early loss of parent (X 3)			
22. Loss of employment (parent or self)			
23. Major depression in parent, sibling (X 2)			
24. Alcoholism in family member (X 2)			
25. Psychiatric illness in family member (X 2); (23-25 Yes = 6 X 2)			
26. History of sexual abuse			
Societal: (3)			
27. "Contagion" suicide episode			
28. Economic down-shift in community			
29. Loss of major support system (group, job, career problems)			

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* "High lethality" defined as method with low degree of reversibility, low risk for rescue (46,47), substantial medical injury, e.g., comatose.

Yes No Uncertain

Personality and Behavior; cognitive style: (60)

30. Anger, rage (intense = X 2; held in X 4; Both = 6)
31. Depression (intensely depressed = X 2; agitated depression = X 4; Both = 6)
32. Hopelessness (X 4) (30; 31, 32, all Yes = 6 + 6 + 4 = 16)
33. Mistrust (paranoid = X 2)
34. Disgust, despair
35. Withdrawn, isolate (2)
36. Low "future time" perspective (X 2)
37. High "past" orientation (X 2) (yes on 36, 37 = 4 X 2 = 8)
38. Rigidity or perfectionism (X 2) (Both = 4)
39. Lack of belonging (X 2)
40. Indifference, lack of motivation (boredom = X 2)
41. Worthlessness, no one cares
42. Shame or guilt (Both = X 2)
43. Helplessness
44. Inability to have fun (X 2)
45. Extreme mood or energy fluctuation (Boch = X 2)
46. Giving away valuables

Physical: (14)

47. Male (X 3); Caucasian (X 2); (both 'yes' = 5)
48. Significantly delayed puberty
49. Recent physical injury resulting in deformity, impairment (permanent = X 2)
50. Marked obesity (+ 20%)**
51. Marked recent underweight or anorexia (-15%)** (more than 20% = X 3)**
52. Sleep disturbed (onset, middle, early awakening)
53. Ongoing physical pain

Interview behavior: (20)

54. Non-communicative, encapsulated (X 4)
55. Negative reaction of patient to interviewer (X 4)
56. Negative reaction of interviewer to patient
57. Increasing "distance" during interview (X 3)
58. Increasing hostility, non-cooperation (X 2)
59. Highly self-critical, self-pitying (Both = X 2)
60. Discusses death, suicide (X 4)

Total Score: _____ (Max. = 162)

Suicide Potential Range Risk Guidelines:
(Tentative ranges - to be evaluated by field-testing):

Severe (110 to 162)
Moderate (60 to 109)
Low (below 60)

.Confidence Level: ______High ______Low

Reasons for low confidence rating:

** Use standard height-weight tables per appropriate age-range

Manual For Use and Scoring The Suicide Screening Checklist (ssc):

(Abbreviated Version)

The SSC is completed during and following an interview that includes major focus on areas to be evaluated. When necessary, available friends or relatives may be utilized to collect relevant data to supplement the primary source of patient interview data.

It is critical, initially, to develop as good a level of rapport as possible to ensure maximal amount of involvement and candidness. Inability to develop a high level of rapport is often important data in itself, as lack of cooperation or disruptively high anxiety may be symptomatic of the current level of coping and adaption, as well as ego function.

Care must also be taken to watch for manipulative behavior, in which the person may be desiring to create a negative image to elicit sympathy, attention, etc., or to create a positive image of good psychological health, either due to denial, or because the person is trying to hide their suicidal intent. The degree of manipulation may also be seen in a positive light, as a reflection of the person's maneuverability and skills at seeking control and mastery.

Scoring

Each item is to be scored as present (yes), absent (no), uncertain or unclear (unc).

Weighted items are scored according to the number (multiplier) in parenthesis. If the data fits the highest weighted score when there is more than one score listed, the higher multiplier should be used. For example, if #36 and #37 are both "yes," the total score for the two items is 8 (2 + 2 = 4 X 2 = 8). In #6, a "detailed, highly lethal plan" would be scored a "3," whereas "preoccupation" alone is scored a "2."

Total the scores of all 60 items.

Try to minimize the number of "uncertain" scores. (Each "uncertain" score receives a zero score.) Use the cut-off score ranges as guidelines to clinical judgment. A high score should be considered ominous, even if not supported by your own clinical judgment.

On the other hand, a low SSC score that is not supported by clinical judgment needs careful exploration to ascertain if a "false negative" has been obtained. An examination of positive scores on key "item clusters," when a low overall score has been obtained, merits special close scrutiny of the total picture. Secondary (i.e., sequential) screening is usually indicated.

"Low level of confidence" must be evaluated, as this rating raises the question of the validity of the total score. Added sources of data are usually needed.

With successive SSC revisions, based on criterion validity, the total scores and cut-off score ranges should assume increasing levels of objectivity.

A SSC score above 120 or below 20 should be viewed with skepticism, and suggests that responses are being slanted to create a "sick" or "healthy" profile. Until a formal "lie scale" is developed, it is sometimes useful to repeat the same questions at a later point in the interview, to determine the reliability of the original response.

Be wary of the effects of licit or illicit drug usage on mood and level of involvement. Verify amounts consumed if possible and be aware of side effects.

Attempt to corroborate questionable response data by questioning accompanying family members or close friends. Usually a sufficient degree of trust can be established in the interview to minimize doubts about degree of manipulation. Establishing an adequate rapport is important, so that the pattern and total score of an adequate screening instrument can provide decisive data in the diagnostic process, which is a vital reason for its incorporation into decision-making.

PREVENTIVE INTERVENTIONS IN THE HEALTH AND HEALTH-RELATED SECTORS WITH POTENTIAL RELEVANCE FOR YOUTH SUICIDE

Barbara Starfield, M.D., M.P.H., Professor and Head, Division of Health Policy, Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Maryland

Summary

The purpose of this paper is to review the usefulness of interventions that have been applied to health problems other than suicide, and to discuss their possible relevance for the prevention of suicide among youths.

Interventions are characterized as altering one of three sectors: the health services sector, the general physical or social environment, or the behavior of individuals at high risk of the problems under consideration. Interventions are also distinguished by their intended influence on populations ("societal level") on services, or on individuals within populations.

The health service system has the potential for greater impact on prevention of suicide than is the case at present. To realize this potential, however, it will be necessary to improve access (both financial and organizational) to services, to improve the consistent utilization of a regular source of primary health care, to improve the recognition of psychosocial problems by means of screening and case-detection, and to improve the management of such problems when they are detected.

The review of the literature concludes that interventions that do **not** require individuals to make choices of activities ("passive" interventions) are likely to have greater benefit in reducing suicide than interventions that depend upon individuals choosing to change their behavior ("active" interventions). As many suicides are unpremeditated and impulsive, efforts to reduce access to or use of the means of suicide are critical. Some of the interventions for reducing access and use require changes at the societal level (regulation of firearms); others take place at the services level (educational and occupational opportunities to reduce feelings of hopelessness and desperation, or provision of barriers to the implements of suicide), and others take place at the individual level (opportunities for rechanneling impulsivity).

Concerted efforts to develop and/or evaluate alternative interventions to accomplish the goal of suicide prevention are urgently needed.

Preventing Youth Suicide: An Eclectic Approach

Question: *Why is it necessary to take an eclectic approach toward suicide prevention?*

Answer: Information that would be required for a more definitive approach is lacking.

1. Little is known about either the etiologic basis of suicide or the circumstances that trigger suicide.

2. There is no widely accepted preventive strategy.

3. Even if there were a strategy, it is not clear that it would be practical, effective, or cost/beneficial, particularly considering the other health needs that are pressing.

The aim of this paper is to draw inferences from preventive interventions that have proven successful in health-related conditions **other** than suicide. Viewing these interventions simultaneously exposes underlying principles that can be applied to suicide prevention, at least until such a time when specific knowledge about the phenomenon of suicide makes a more definitive approach possible.

This paper will first define a model for prevention, present evidence for intervention within the model (pointing out where the challenges of suicide are similar to the situation under consideration), and suggest an agenda for research that can inform the development and choice of alternative strategies.

A MODEL FOR PREVENTION

The health of a population or of an individual is determined by four types of factors: genetic composition and biologic structure, the social and physical environment, behavioral traits, and the health care system. These four factors are all mutable and hence potential targets for preventive strategies. As technologies to alter genetic structure are still in their infancy, only approaches based on the environment, the health care system, and behaviors can be considered at this time as feasible interventions. Each of these can be divided into strategies that are targeted at society in general, at services, or at individuals. Furthermore, strategies within these subcategories can be further divided into those that prevent risk, those that detect risk early, and those that decrease the probability of adverse outcome even when the effects of risk are manifested.

Table 1 presents the first two axes of the matrix, with examples of the type of intervention in each of the nine resulting cells.

For the most part, societal approaches are passive; that is, they do not require individuals who are affected or for whom prevention is intended to chose between alternative behaviors. Their effect depends upon reaching populations rather than specific individuals, such as through prohibiting the sale of alcohol to all people under age 21. Service interventions may be either passive or active; where the intervention is active, the behavioral changes involve "interveners" rather than the individuals who stand to benefit from the intervention. In some cases, an intervention in the services sector may be both passive and active, as in the case where a pediatric practitioner makes car seats available to new parents (passive on the part of the recipient) but the parents must install it (active). Interventions at the individual level are directed at altering the choices of individuals whose activities are dysfunctional.

In the ensuing discussion, interventions are discussed by category as follows:

I. Health Systems Approaches.
    A. Societal level
        1. Organization and financing of services
            a. improving accessibility
            b. improving continuity and comprehensiveness.
        2. Products or procedures intended for specific purposes.
    B. Services level
    C. Individual level
II. Environmental Approaches
    A. Societal level
    B. Services level
    C. Individual level
III. Individual Behavior Approaches
    A. Societal level
    B. Services level
    C. Individual level

In all of the above categories, subcategories denoted by bullets (●) distinguish the different types of prevention (prevention of risk, early detection of risk, and reducing the likelihood of adverse outcome.)

HEALTH SYSTEMS APPROACHES TO PREVENTION

A. Health System: Societal Level

Interventions in this class of approaches involve strategies that are targeted to the population as a whole. They are characterized by legislative, organizational, regulatory, or financial mechanisms designed to reduce the occurrence of an adverse effect or several adverse effects. Successful interventions have been of two main types: those designed to alter the organization of delivering health services by improving accessibility to services and/or continuity and comprehensiveness of services, and those designed to provide a product intended for a specific purpose.

1. Organization and Financing of Services

a)Improving accessibility to services. Access to services is an obvious prerequisite to effectiveness of services, because no benefit can occur if there is an inability to reach the services. It may not be obvious, however, that either an increase or a decrease in accessibility to services will improve or reduce the effectiveness of prevention, given levels of access already attained within the health system in the United States.

Evidence does indicate that a dramatic increase in the accessibility of services in recent times occurred with the passage of the Social Security Amendments in the mid-1960s. This legislation was followed by marked changes in the use of services by individuals in population groups that had been relatively disadvantaged before that time. Medicare increased use of services by the elderly, and

Approaches to Prevention with Examples of Types

	Health Systems	Environment	Individual Behavior*
Societal level	Primary care (improved access, continuity coordination, and comprehensiveness) Safety procedures (medication packaging)	Physical/environment modification (airbags, gun control)	Seatbelt laws, helmet laws
Services level	Improvements in providers recognition of patients' needs (better medical records, "activated patients," standardized screening procedures)	Risk assessment (as in school)	Smoke detector distribution**
Individual level	Better risk management; reducing amounts of medication prescribed, home visiting	Early intervention program (e.g., Headstart)	Health education (TV, newspaper, pamphlets)

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* In some circumstances, individual behavior may change the environment, as in the case of installation of smoke detectors. The critical step, however, is in the decision of the individual who is at risk to act to change the risk.

** Where such devices (including smoke detectors, car seats, safety plugs and similar items) are distributed within health facilities, they may be considered under the health systems rubric.

Table 1.

Medicaid (Title 19) increased use of services by the poor (Davis and Schoen, 1978). This increased access improved health in children by facilitating all three types of prevention: preventing risk, early detection of risk, and reducing the likelihood of adverse outcome (Starfield, 1985).

- **Preventing risk.** Notable in this category were the programs to reduce the likelihood of births to teenagers. Births to teenagers subject the mother to a variety of adverse effects; in addition, their offspring are at markedly increased risk of both increased mortality and morbidity. Rates of teenage births have been falling for the past two decades, initially coinciding in time with the initiation of organized family planning activities in the public sector in the early 1960s. Marked declines in the rate of births to teenagers followed the legalization of abortion in a succession of States from 1968 to 1973. These legal acts provided access to services that had heretofore been accessible only to those with the financial resources to obtain abortions by illegal means. Teenagers were special beneficiaries of legalized abortions: although they comprise about 20 percent of the population, they account for one-third of all abortions. Since legalization, teenagers whose first pregnancy ended in an abortion were only half as likely to become pregnant again within a year than was the case for teenagers whose pregnancy resulted in a live birth. Despite the legal availability of abortions, gaps still remain in access. Only 23 percent of counties in the United States have facilities for abortions, and teenagers are more likely than older women to delay in obtaining abortions during pregnancies.

  A second example of the importance of accessibility to services on a societal level concerns the reduction in frequency of postneonatal mortality (death in infants more than one month but less than one year of age). Reductions in postneonatal mortality rates have been erratic over this century, largely coincident with the initiation of legislation or administrative action on a Federal level. In recent times, the most important of these programs were Medicaid (which provided a means to pay for services for those who previously had difficulty affording them) and funding of community health centers. Postneonatal mortality fell dramatically in the late 1960s but the rate of decrease slowed in the 1970s and especially in the early 1980s. In 1982-84, rates did not decrease at all, in a time characterized by reduced access to care for the poor as a result of reductions in the Medicaid program. The importance of access to services is highlighted by evidence that the excess in postneonatal mortality in the United States, as compared with many other industrialized nations, is a result of an excess in deaths due to infectious causes and accidents. Deaths due to infectious illnesses, and at least some of the deaths associated with injuries, are largely preventable with early receipt of health services.

- **Early detection of risk.** Accessibility to certain services is important for the early detection of risk. Evidence indicates that effective detection of risk resulting from conditions such as phenylketonuria and congenital hypothyroidism requires organizational arrangements to facilitate obtaining specimens for testing, rapid transport and analysis, and efficient reporting of abnormalities and followup. A cross-national comparison of newborn screening indicated that health systems that have unambiguous lines of responsibility and centralization of laboratory facilities provide more rapid institution of treatment when it is indicated. In the United States, States that provide testing free of charge are more likely to have a State laboratory as the sole site of testing. Public support of these facilities is, of course, required for the establishment and maintenance of such services (Egbuonu and Starfield, 1985).

- **Reducing the likelihood of adverse outcome.** Efforts to regionalize perinatal services have been rewarded with declines in both infant mortality and morbidity at one year of age. This decline is linked to shifts in the hospital where delivery occurs, resulting, in turn, from more adequate antepartum risk identification and transfer of high risk pregnancies to tertiary medical centers. Regionalization of such services in the United States is widespread; evaluation of a demonstration project failed to show better performance in the demonstration areas than in comparable control areas, because centralization of high risk deliveries is an organizational change that has occurred in many areas (McCormick et al., 1985).

b) Improving continuity and comprehensiveness of services. In most other industrialized nations, health services are organized by levels of care such that primary services, secondary (consultative) services, and tertiary (specialty services) are deployed geographically according to the extent of need for services. Primary services provide the point of entry into the health system for new problems, comprehensive services (including referral to other care when indicated), continuity of care, and coordination of care (if care is received from other sources). Evidence indicates the usefulness of continuity and comprehensiveness for all three types of prevention.

- **Preventing risk.** Reductions in low birth weight rates and neonatal mortality (deaths within the first month of life), following improved continuity and comprehensiveness, are examples of the usefulness of such approaches to prevention. An analysis of the impact of comprehensive (as compared with standard) prenatal services as provided by a Maternity and Infant Care Program authorized and funded at the Federal level concluded that inclusion of nutrition counseling, social services, and dental care were associated with better birth weight distributions (Sokol et al., 1980). The experiences of at least certain large prepaid group practices is also instructive (Shapiro et al., 1960, Quick et al., 1982). In New York City, low birth weight ratios were lower in births to patients in such practices regardless of the trimester in which care was sought, and within groups varying in prior pregnancy outcomes. Prepaid group practice patients also had lower frequencies of low birth weight than patients receiving their care from other private practitioners (Shapiro et al., 1960). Other experience in Portland, Oregon (Quick et al., 1982), showed a small advantage to prepaid group practice patients, despite a longer delay in seeking prenatal care and smaller number of prenatal visits. In these organizations, prenatal care is but one component in the ongoing and comprehensive care of the woman who is enrolled.

- **Early detection of risk.** Legislation in the mid-1960s facilitated the organization of facilities to provide comprehensive services to children living in high-risk areas. An evaluation of the benefits of such services showed that children in areas with such organizations were less likely to develop acute rheumatic fever than were comparable children living in areas without such facilities, because of early detection of streptococcal pharyngitis (Gordis, 1973).

- **Reducing the likelihood of adverse outcome.** A variety of studies in clinical facilities demonstrate the advantages of care that is continuous over time, either with regard to a particular practitioner, or a particular practitioner team. For example, two studies concerning children with asthma showed the importance of an ongoing source of care for management of the illness. Children who sought their care from an emergency room had higher hospitalization rates than children receiving care from a private physician (Mak et al., 1982). A much larger proportion (45%) of asthmatic children whose regular source of care was a health maintenance organization reported having ongoing care for their asthma, as compared with only 26 percent for children whose predominant source of routine care was a hospital outpatient clinic (German et al., 1976).

Having and using a particular source of regular care is associated with more timely visits in an illness (Steinwachs and Jaffe, 1978), improved taking of prescribed medications (Charney et al., 1967), better satisfaction with care (Wasson et al., 1984), lower utilization for illness care (Alpert et al., 1976), and fewer hospitalizations (Wasson et al., 1984; Moore, 1979).

Why are these data on the importance of health system factors of relevance to the reduction of youth suicide? To the extent that suicidal children are children who are troubled, and perhaps have been troubled for a long time, organizational and financial arrangements that enhance access to care and the development of a relationship with an ongoing source of care might be expected to facilitate seeking of care in a presuicidal stage. In a study of male adolescents who had been hospitalized, Motto (1984) found that those who subsequently committed suicide generally had sought medical help, and were able to communicate with health professionals, although not very well. A study of clinical records of adolescents who were admitted to a mental health service found that patients began to refer themselves in significant numbers at mid-adolescence (ages 15-16) suggesting that improved access to services might reach not only these youths but also others who are not now coming for services. The importance of parents as referral sources decreased with age, whereas medical and school sources were important at all ages (Mitchell and Smith, 1981). Although it is not yet possible to efficiently screen populations for suicidal predispositions, it is possible to reduce the likelihood of suicide in individuals who demonstrate presuicidal behavior or attempt suicide unsuccessfully (Maltsberger, 1986). Organizational and financial arrangements mandated at the societal level and conducive to the building of long term relationships between health services personnel and patients can also be expected to enhance the extent to which practitioners recognize and deal with patients' problems, as will be indicated later in the discussion of "service level" approaches to preventing problems.

2. Products or procedures intended for specific purposes

- **Preventing risk.** Preventing the occurrence of contagious diseases by means of immunizations is an example of such an activity. Both incentives and deterrents have been employed to great advantage. Laws in every State require that children be completely immunized upon school entry. As a result, between 75\percent and 90 percent (depending on whether completeness is considered for all conditions together or for each condition separately) of school age children are completely immunized (Egbuonu and Starfield, 1985). For preschool-age children, who havè no legal requirement for immunization unless they are registered in a licensed day care center or preschool, the percentages are much lower, i.e., 50-60 percent completion of immunization for each of the conditions.

The success of incentives to immunize children is shown by evidence of the importance of Federal support for vaccination prögrams. Over the most recent decade, illness rates of measles have waxed and waned following the input or withdrawal of Federal funds to support immunization campaigns (Blendon, 1983).

Another type of health system intervention to reduce risk at the societal level is safety packaging legislation. After passage of the Poison Prevention Packaging Act, there was a 35 percent decrease in the number of children taken to emergency rooms after ingesting products regulated by the Act; during the same period (1973-76), poisoning by unregulated products increased by 20 percent (Baker, 1981). Since the introduction of the childproof container and the reduction in the number of aspirin tablets per container (done voluntarily by manufacturers in 1968), the incidence of childhood poisoning from baby aspirin has decreased by about half (Rivara, 1982).

- **Early detection of risk.** Neonatal screening, diagnosis, and prompt treatment are very efficacious in preventing the occurrence of congenital conditions such as phenylketonuria and hypothyroidism, as noted earlier. After the development of a test for screening populations of newborns, however, widespread screening did not occur until the passage of legislation to require the test. In this case, as in other similar cases, the passage of a law was required to convert an efficacious medical procedure into one that would be applied when it was needed and in a timely fashion (Committee for the Study of Inborn Errors of Metabolism, 1975).
- **Reducing the likelihood of adverse effects.** The prototype of such an activity is found in the international campaign to eradicate smallpox. The success of this effort depended on identifying all cases of the disease in all countries of the world and in all parts of these countries, and the tracing and vaccination of all contacts of the diseased individual. Case-finding was facilitated by the development of a network of contact among villagers, and included the payment of a "bonus" for the reporting of a case (Henderson, 1976).

The development of specific products or procedures **within the health services system** may have no direct parallels for reducing suicide because it is unlikely that a specific "immunization" would be feasible or that an efficient case finding network would be useful. However, a societal commitment to design specific approaches for detecting individuals at high risk may be necessary to implement other strategies with more direct applicability. The next section deals with the effectiveness of interventions that are undertaken at the level of facilities or groups (rather than at the societal level), for the purpose of reducing risk, detecting it early, or preventing the occurrence of adverse outcomes.

B. Health System: Services Level

In order to be effective, available services must be translated into the actual provision of services. In providing medical care, practitioners first undertake activities that enable them to recognize that the patient has a problem ("needs recognition"). Prevention at the "services" level starts with the second level of prevention (early detection of risk) rather than the first level (prevention of risk), as facilities usually (and perhaps unfortunately) do not intervene in the chain between etiology and illness (except for immunization procedures). Conceivably, medical facilities could do more to undertake primary prevention, such as by helping schools and other community facilities to provide safer facilities, to maintain standards for healthful behaviors, or to develop curricula for suicide prevention, but there is no well recognized example of the undertaking and evaluation of such activities.

- **Early detection of risk.** Several criteria are required to justify this form of prevention, which is commonly known as "screening." The problem must be important enough to justify the efforts, which are generally directed at individuals in a given age-sex class, or at least at all individuals judged to be at high risk of a condition. Screening, by definition, is the search in an apparently healthy population for individuals at risk of a disease or problem. The natural history of development of the condition must be known, since screening cannot be justified if it detects individuals at a time when little can be done to reduce the progression of the condition. The population to be screened must accept the procedures involved, and the testing procedure must reach all for whom it is intended. Certain test properties should be maximized: reliability, sensitivity, specificity, and timeliness. An intervention to reduce the likelihood of progression to overt disease must be available and it must be acceptable and efficacious. Finally, the procedure must be cost-effective, i.e., it must produce more benefit than it costs in monetary and nonmonetary terms.

Several screening procedures in the care of children fulfill these criteria. Among them are hearing and vision screening at defined periods throughout childhood, screening for lead poisoning in populations at risk for it, and screening for hypercholesterolemia in individuals with a family history of it (Diaz et al., 1982).

There are, however, several conditions that do not fulfill all of the criteria for screening. Despite common practice in some locales, screening cannot be currently justified for scoliosis (Berwick, 1985), urinary tract infection (Diaz, op cit) hypertension (ibid), non-familial hypercholesterolemia (ibid) or congenital conditions other than phenylketonuria and hypothroidism (ibid).

- **Reducing the likelihood of adverse outcomes by improving the quality of care.** A variety of studies have shown that health personnel frequently fail to recognize problems, even when they are explicitly conveyed by patients. The deficit is particularly striking in the case of psychological (Starfield and Borkowf, 1969) and social conditions (Chamberlin, 1971) but it also occurs when the problems are frankly organic in nature. For example, a study in several different facilities indicated that patients and practitioners agreed only half the time on the problem for which the patient was being followed (Starfield, 1981a). Several modifications made in the operation of clinical facilities can improve this aspect of the quality of care and hence reduce the likelihood of an adverse outcome. The introduction of teams of health personnel who remain constant in caring for defined groups of patients has been found to improve the extent to which behavior problems of children are recognized (Becker et al., 1974). The employment of an "ombudsman" who helps patients to articulate their concerns to practitioners helps practitioners recognize these concerns (Roter, 1977). Certain modifications made in medical records also improve this aspect of care. These include the highlighting of abnormalities by means of fluorescent tape that obscures the abnormal information and must be removed to reveal the abnormal finding (Williamson et al., 1967) and the incorporation of an "at risk" form such as the Framingham Safety Surveys in which potentially adverse home situations are highlighted for the practitioner (Bass et al., 1985). Other mechanisms to enhance the ability of practitioners to recognize patients' problems include problem lists incorporated into medical records. These lists help practitioners to recall important problems and to followup on them (Simborg et al., 1976).

Another approach to improving the quality of care involves giving practitioners profiles of their care (for example, a list of patients with their diagnoses) and profiles of other practitioners working in similar settings. Differences in the proportion of patients with particular problems can serve to highlight possible deficits in the extent of recognition of patients' needs, if no particular reason for these differences is evident (Starfield, 1980).

In general, the greater the collegiality of organization of practitioners in a particular facility, the better the quality of care in that facility. In a review of the literature on determinants of quality of care, Palmer and Reilly (1979) found that the most consistent correlates of high quality are the extent to which practitioners work as a group and have their work visible to their peers, the length of postgraduate training in their speciality, and the volume of work they do in the subject for which quality of care is assessed.

Risk assessment done within health facilities is of potentially great relevance to reducing frequency of youth suicide. Although the relative importance of depression vs. other types of psychosocial behavior disorders in predisposing to suicide is still debated (Behar and Stewart, 1981; Felice, 1981), it is likely that screening for psychosocial problems will soon reach a stage where it can be justified for general use. Studies have found that pediatricians generally do not know the children who committed suicide in their communities (Hodgman and Roberts, 1982) and there is wide variability in the criteria that physicians use to diagnose depression and other child behavior problems. Although there is currently no instrument that has been shown to accurately predict self-destructive behavior, the development of a variety of tools (Fine et al., 1984; Hankin and Starfield, 1986), with subsequent widespread testing and validation, may change this situation in the relatively near future.

Other aspects of the quality of care also have relevance to suicide prevention. Between 1971 and 1976 in Australia, there was a 50 percent decline in suicides attributable to barbiturates, at the same time that the number of prescriptions written for barbiturates declined from 40 million to 20 million. In the United States, an increase in multiple drug use, especially when combined with the use of alcoholic beverages, was associated with an increase in drug-related suicides (Eisenberg, 1984). In a study in Australia, an increase in rates of suicides in young females was associated in time with a relaxation in prescribing standards in that country (Markush and Bartolucci, 1984).

- **Reducing the likelihood of adverse outcome by improving access to facilities.** There are many examples of the importance of accessibility to medical facilities and the development of arrangements to facilitate it. The institution of special telephone lines, 24-hour access, and neighborhood satellite clinics led to marked reduction in the rate of hospitalizations of individuals with diabetes (Starfield, 1985, pp. 97-102). The effect presumably was due to the early management of infection and prevention of diabetic ketoacidosis. Earlier receipt of care also reduces the likelihood of complications in bacterial meningitis (Starfield, 1985, pp. 109-19). A notable demonstration of the importance of medical care on deaths from bacterial meningitis was provided by a study (Fraser et al., 1975) in Vermont. In that study, child deaths from obscure causes were highest in towns with fewer medical resources and lower rates of diagnosis of meningitis (presumably due to diagnoses that were not being made because of the poor access to medical practitioners).

Another successful effort to improve the accessibility and effectiveness of care for individuals with problems concerned the reduction of pregnancies among teenagers. Several evaluations have shown that community (and often school-based) programs result in a decline in the rate of repeat pregnancies, and an increase in the pregnancy rates when the programs are discontinued (Starfield, 1985, pp. 37-47).

Thus, various aspects of the practice of medical care have direct relevance to attempts to reduce the frequency of suicides in youth. Many aspects of medical care practice are effective in improving care. Evidence of the potential of at least one of the modifications in health services (institution of special facilities to reduce the likelihood of adverse outcome) has already been demonstrated in the case of suicide reduction, although the magnitude of the effect was relatively small. From 1968 through 1973, the years of the greatest growth in suicide prevention facilities, counties with these facilities showed greater reduction in suicides in young white females, and a lesser increase in suicide rates in young white males, than counties without such facilities (Miller et al., 1984).

C. Health System: Prevention at the Individual Level.

In prevention at the individual level, the target of intervention is the particular individual who is at risk of problems or already suffering from problems. Detection of this risk requires alertness in dealing with individuals entering the health sector, and in helping individuals to marshal resources to deal with circumstances that predispose them to adverse outcomes. There are several prototypes of successful interventions at this level.

- **Preventing risk.** As noted above under strategies at the "services" level, this type of prevention is rarely undertaken by health facilities or clinical practitioners, at least during the course of their ordinary professional activities. (Public health practitioners are distinguished from clinical professionals, as they generally work at the societal level rather than the facilities or individual level.)
- **Early detection of risk.** In addition to interventions initiated at the services level (summarized in Section B above), mechanisms to detect children at risk can be applied at the individual level rather than to groups of individuals. Recent research has identified children who are at high risk of relatively heavy burdens of mortality and morbidity. Among these are children in low income families (Egbuonu and Starfield, 1982), who are at two to four times the risk of many types of conditions as compared with children from higher income families (Starfield and Newacheck, in press). Others at high risk, regardless of social class, include children with persistently high use of health services. These children are at more than twice the risk of having high burdens of morbidity of various types including mental health problems. In studies of the relationship between utilization and morbidity over several years of time, high burdens of morbidity are defined as the presence of several types of morbidity rather than multiple episodes of one type (Starfield et al., 1985). The major types of morbidity under consideration include acute but self-limited conditions, acute but likely-to-recur conditions, chronic medical conditions, chronic nonmedical (such as ophthalmologic, dermatologic, or orthopedic) conditions, and psychosocial or psychosomatic conditions (Starfield et al., 1984). No study has yet been conducted to demonstrate the benefits of identifying such children in a clinical setting. However, it is possible that identifying these children early and subsequently trying to determine the source and etiology of increased morbidity, could help prevent progression to subsequent morbidity and dysfunction.
- **Reducing the likelihood of adverse outcome.** Home visiting to reduce the occurrence of problems in high risk pregnancies is one example of an intervention that has proven successful, at least in some aspects. In one careful evaluation (Olds et al., 1986) of a home visiting program targeted at women who were teenagers, unmarried, or of low socioeconomic class, birthweight and length of gestation were increased among those at particularly high risk of adverse outcome: young teenagers and smokers. Other examples of interventions to reduce undesirable outcomes in

children at risk for deviant development are summarized by Rolf (1985). Unfortunately, the range of possibilities has not, as yet, been subjected to demonstration with appropriate evaluation of results.

Individual approaches, within the health services sector, to the prevention of suicide in youths has intuitive appeal. High rates of stress have been reported among children who attempt or commit suicide; these findings have been reported from abroad as well as the United States (Michaud, 1983-1985; Kitamura, 1983-1985; Kosky, 1983; Eisenberg, 1984). Suicidal children have been found to have higher rates of prior hospitalization than comparably disturbed but nonsuicidal children (Kosky, 1983), and adverse social experiences such as family suicide, broken families, other familial loss, school failure and abusive home situations (Eisenberg, 1980; Pfeffer, 1984). By pooling data from many studies, Paykal (in Garmezy and Rutter, 1983, p. 3) estimated that life events involving threat led to a six-fold increase in the risk of suicide during the subsequent six months. These findings raise the possibility of intervention by health professionals who are sensitive to the situations that tend to predispose disturbed children to suicidal attempts. This sensitivity to the needs of individuals who seek care, may go a long way to reducing the frequency of suicidal attempts, if recognizing problems leads to effective action of the types described in this section.

The potential ability of the health care system to identify and deal with individuals at high risk of suicide cannot be assumed. Some studies have found suicidal behavior to be relatively frequent in the child population, e.g. Pfeffer found that 9% of preadolescent children expressed suicidal ideas, 2% expressed suicidal threats, and 1% had made an attempt (Fine et al., 1986); however, many pediatricians do not appear to know the major risk factors for suicide (ibid). The fact that younger pediatricians had more accurate knowledge (ibid) provides encouragement for the future. However, improvements in health services at the individual level cannot be expected to take place without changes at higher levels (societal and services levels) that improve both access to health services for individuals who need them and use of those services by children who have reason to believe that these services have something to offer them.

ENVIRONMENTAL APPROACHES TO PREVENTION

In this category are interventions to modify the environment that do not require intentional behavior change on the part of individuals at risk.

A. Environment: Societal level

- **Preventing risk.** The literature is replete with examples of successful reduction of risk by environmental modification mandated at the societal level. Federal statutes to reduce the amount of lead in gasoline had a major impact in reducing body burdens of toxic lead among both children and adults (Mahaffey et al., 1982). As is the case with suicides, damage from elevated lead levels is a problem that crosses social class (Bellinger et al., 1986). There is a 50-70 percent reduction in motor vehicle fatality rates when occupants of cars are equipped with air cushions that inflate on impact (Berger, 1981; Insurance Institute for Highway Safety 1978). The Flammable Fabrics Act of 1977 requiring children's clothes to be flame retardant led to a reduction in the number and severity of burns in children (Iskrant, as cited in Rivara, 1982) and a dramatic decline in sleepwear-related flame burns (Berger 1981). Babies in the United

States are no longer asphyxiated by small pacifiers as a result of regulation of the manufacture of pacifiers; the pacifiers are now required to be sufficiently large so that babies won't inhale them (Baker and Fisher, in Baker, 1981).

Swimming pool barriers also prevent risk by modifying the environment at the societal level. When regulations required barriers around swimming pools in Australia, swimming pool deaths declined 80 percent (Rivara, 1985). In Canberra, pools must be fenced but this is not the case in Brisbane; although the number of swimming pools per 100 homes is similar in the two cities, the swimming pool death rate is 14 times as high in Brisbane (Baker, 1981).

Similarly, fireworks legislation is a prototype of an environmental modification at the societal level. The rate of injuries in States allowing many types of fireworks was more than seven times greater than that in States that ban all fireworks or allow only sparklers or snakes; the rate of fireworks-related injuries was 53 times greater (Berger, 1981).

The potential for societal actions to reduce risk has not been fully exploited. Tap-water scalds, which are estimated to result in more than 400,000 hospital admissions annually, could be prevented by designing hot water heaters so that they cannot discharge water at scalding temperatures (Baker, 1981). Modifying housing codes to require installation and maintenance of smoke detectors would greatly reduce deaths from fires (as will be noted below under interventions to alter behavior).

Societal actions to reduce risk have relevance for the prevention of suicide. Available information indicates that gun play by young children promotes antisocial behavior (Turner and Goldsmith, as cited in Christoffel, 1985) thus raising the possibility that regulation of their manufacture could reduce such behavior. Most of the three million air guns and rifles sold each year in the United States are sold to children under age 15; they are estimated to cause more than 25,000 injuries each year. Prohibition of their sale has potential for reducing injury rates as well as reducing the likelihood of progression from nonpower weapons to the more lethal guns (Christoffel, 1985). Requirements that houses be built with cabinets in which to place hazardous implements such as guns could reduce the extent to which impulsive youths succeed in killing themselves. Codes of behavior on the part of the press could reduce suicides, as vivid newspaper and television reports of successful suicides have been followed by epidemics of suicide among those exposed to them (Eisenberg, 1983; Eisenberg, 1984; Gould and Shaffer, 1986; Phillips and Carstensen, 1986).

A societal commitment to decreasing violence in television broadcasting has the potential to reduce aggressive behavior among children. Although current evidence suggesting that the effect of television, while adverse, is relatively ill-defined, a focus on this subject not only will help to elucidate the nature of the relationship but also will provide a better understanding of why children are spending so much time watching television rather than being more productively engaged (Committee on Research on Law Enforcement, 1982).

A dramatic decline in suicide rates among the elderly followed the societal commitment to the elderly that occurred in the mid-1960s as a result of Federal legislation (Preston, 1984). Marked declines in evidence of alienation among the elderly ensued, manifested at least in part by their increased voting rates. No similar commitment has been made to children, and recent national surveys show increasing alienation among the young. As suicide is the ultimate expression of alienation (Eisenberg, 1980), improved societal commitment to reduce alienation and improve the extent to which individuals see value in their own futures may have a large untapped potential for reducing suicide among children.

- **Reducing the likelihood of adverse effects.** A prototype of this type of activity is housing ordinances that require the deleading of homes in which children are found to have elevated or borderline blood lead levels (Farfel, 1985).

The analog to prevention of suicide through reducing adverse effects by environmental means at the societal level is handgun control. The increasing rates of suicide since the 1950s among youths of ages 15 to 24, and the increasing rates among children of ages 10 to 14 since the mid-1970s are associated with rising proportions of suicides by firearms; two-thirds of the suicides in older youths and one-half the suicides in the younger group are now accounted for by firearms (Moscicki, 1985). Although elimination of handguns will not necessarily reduce the rate of suicide attempts since other means may be substituted (Westermeyer, 1984), control of this highly lethal mechanism can be expected to reduce fatalities resulting from such attempts. Areas with stricter restriction of handgun ownership have fewer gunshot deaths (Wilson, op cit; Markush and Bartolucci, 1984). Effectiveness of handgun control depends upon the strength of the legislation; a law that merely mandated a one-year jail sentence for anyone convicted of violating the firearm licensing and registration laws failed to decrease the frequency of suicide in Massachusetts (although it did reduce the rate of homicides) (Mahler and Fielding, 1977).

B. Environment: Services level

A prototype intervention at this level is found in the area of early educational intervention. In these programs, young children from high risk families are provided educational experiences to compensate for deficits in their biological status or social situation. In recent years, a variety of these programs have been evaluated and demonstrated to be effective in accomplishing their purpose. Although design weaknesses reduce the strength of the conclusions, interventions to overcome biological handicaps in infants appear to be of considerable value (Simeonsson et al., 1982). Stronger conclusions are reached from evaluations of interventions to reduce the impact of social disadvantage. Careful long term studies of early intervention reveal persistent effects including improved school function, less need for special education, less grade retention, and less dropping out of school for children in these programs (Darlington et al., 1980).

Early educational intervention encompasses prevention in all its aspects: prevention of risk, early detection of risk, and prevention of adverse outcome from risk. The design of the intervention prevents risk in the individual children and provides a mechanism for early detection of deterioration. Well developed linkages with other social and health agencies prevents the progression of deterioration by active channels of referral to other types of services when required.

The applicability of educational services to suicide prevention is primarily in the reduction of suicide among population groups for whom the interventions are designed, i.e., Headstart for the socioeconomically disadvantaged. Although few studies include a socioeconomic variable, suicide appears to be more common among poor youth than among their more affluent peers. For example, in Maine, death rates from suicide among children in families receiving Medicaid are higher than those for other children, although small numbers precluded assessment of statistical significance (Nersesian et al., 1985). Other evidence suggests a similar conclusion. Among children who were hospitalized for mental problems in Australia, a higher proportion of suicidal children were from families that were solely dependent for income on social benefits than was the case for children with other types of psychiatrically ill but nonsuicidal children (Kosky 1983). To the extent that suicide attempts are more common among socially disadvantaged youths, the wider dispersion of early interventions such as Headstart should decrease the incidence of problems that predispose to suicides.

C. Environment: Individual level

A potentially useful intervention to detect risk and/or reduce the likelihood of adverse outcome is suggested by evidence that school teachers are able to recognize pathology in children and, in some cases, to do so better than physicians. One study (Starfield and Sharp, 1974) compared teacher observations with physician examinations, both for somatic and behavioral problems. Whereas physicians detected more problems from their observations and tests on routine examination, teachers detected more problems in functioning, both with regard to somatic ailments and behavioral problems. Teachers are also in a position to recognize abnormalities that may not be recognized by the child's parents. Several studies have indicated that teachers' and parents' ratings of behavior problems are complementary in that different children are identified as impaired because of differences in the types of behavior that are manifested at home and at school (Hankin and Starfield, 1986). Unfortunately, physicians are poor at recognizing problems that have been detected by others (Starfield et al., 1976) and, as noted above in the discussion of health system interventions, improvements in organization to facilitate the process of "needs recognition" are required coincident with efforts to capitalize on the contributions to prevention that could be made by teachers.

BEHAVIORAL APPROACHES TO PREVENTION

In this category are activities that require intentional behavior change on the part of individuals who are at risk.

A. Behavior: Societal level

Behavioral change at the societal level include activities targeted at populations but requiring intentional behavioral change on the part of individuals to reduce exposure to risk.

- **Preventing risk.** In this category is the passage of legislation to alter behavior that puts individuals at risk of motor vehicle accidents. Legal imposition of the 55-mph speed limit was followed by a reduction of fatalities from 1973-1979, at least half of which were saved by the reduced speed limit (Rivara, 1982).

  Window guards are another example of prevention of risk by societal means to alter individual behavior, although, when mandated by law or housing code, they fall in the category of environmental modification at the societal level. In New York City, reported falls from windows declined 50 percent after installation of guards on windows in areas with high rates of reported falls. About 25 percent of the guards were actually installed by health department personnel; in all cases, personnel inspected the windows to assure their proper installment. As a result of this successful program, the New York City Board of Health amended its health code to require owners of multiple dwellings to provide window guards in apartments where children 10 years of age and under reside (Speigel and Lindamen, 1977).

- **Reducing adverse outcomes.** The effectiveness of laws directed at altering individual behaviors about seat belt use has been demonstrated. In 1978, the Tennessee Child Passenger Protection Act mandated that children under age 4 travel in restraint devices. The observed use of restraints increased at the same time that occupant death decreased in the protected group. Deaths that did occur were found disproportionately in children traveling unrestrained (Wilson, op cit).

The usefulness of legislation to require helmets in motorcyclists has been well shown. About three-quarters of motorcycle fatalities are a result of head injury. Helmets decrease the likelihood of this outcome by about 75 percent. The 27 States that revoked their helmet laws after a 1976 change in the Federal requirements had a drop in helmet use and a 40 percent increase in deaths (Rivara, 1985). In Australia, legislation requiring the wearing of helmets reduced motorcycle fatalities by about two-thirds (McDermott, 1983-1985).

B. Behavior: Services level

This category consists of two types of interventions: those that require a single act and those that are general in nature. As will be evident from this review, interventions that require only one action are far more effective than those that are general in nature. All of the reviewed activities operate by reducing the likelihood of adverse outcome.

After an increase in rates of deaths related to fires in 1982, the Baltimore City Health Department gave away almost 4,000 smoke detectors to households that requested them. A subsequent evaluation (Gorman et al., 1985) found that smoke detectors had been installed in 92 percent of those homes and were operational in 88 percent. Households requesting the alarms were in the census tracts at highest risk for fires. In a white, middle class pediatric practice in Pittsburgh, a brief educational message and offer to purchase a smoke detector succeeded in purchase and installation of the detectors in over one-third of experimental families, compared with none of the families not offered the opportunity (Miller et al., 1982). These were successful interventions requiring that individuals voluntarily change one specific behavior.

A Danish firm voluntarily replaced the cord of a popular vacuum cleaner that had caused mouth burns in toddlers. Twenty thousand households requested replacements, with a consequent decline in the number of mouth burns (Wilson, op cit). A similarly effective targeted invention involved the distribution of free covers for unused electrical outlets in the home; this was followed by an increase in use of such devices (ibid). Similar in concept is the voluntary boycott or withdrawal of dangerous toys (ibid).

Several studies evaluated the effectiveness of efforts to increase the use of seat restraints. The studies had mixed results. In one program, car seats were offered free to mothers on a postpartum ward; this failed to convincingly increase the rate of use of such devices. On the other hand, all Vermont hospitals delivering babies participated in a program that required active commitment to the use of car seats by charging a rental fee; the result was a relatively high rate of use of the devices (ibid).

C. Behavior: Individual level

Interventions at this level are directed at rechanneling dysfunctional behavior of all types. Individuals who feel themselves under great stress or uncomfortable about their own behaviors could enroll in activities such as community workshops, sports programs, or theater groups (Michaud, 1983-1985). As the evaluation of these programs to prevent suicidal behavior directly are reviewed elsewhere in this series of papers, they are not discussed further here.

CONCLUSIONS

In drawing conclusions from the data, certain working assumptions are made even though some of them remain to be proven.

1. Suicide is not a unique disease, condition, or disorder. No unifactorial etiology is likely to be found, and predisposing factors and mechanisms will continue to vary with time and across population groups, even within the child and youth age group.
2. Children differ in important ways from adults, and in ways that have implications for suicide prevention. Children have fewer means of coping with adversity, both

because of their dependency and because of their less developed fund of accumulated knowledge about the environment and their place in it. Children also have fewer options regarding the means of committing suicide.

3. The correlates of suicide differ from the correlates of suicide attempts, although there is undoubtedly an overlap of some characteristics. In childhood, however, the difference is probably not as great as in adults (Kosky, 1983).
4. The choice of strategies to prevent suicide should be dictated by considerations of both practicality and costs (as well as, of course, potential effectiveness). The intervention must reach those for whom it is intended and be accepted by them, and the costs must be weighed against the costs of strategies to attack other health problems of high priority. The effectiveness, as well as the practicality and costs, will vary depending on whether the intervention is at the population, services, or individual level.
5. The choice of strategies would be facilitated if certain types of information were available. There should be a research strategy that involves the continued and augmented collection of information about the epidemiology of suicides in children and youth, and all interventions should be accompanied by an evaluation. Research and evaluation are needed to fill the gaps in knowledge, eliminate ineffective solutions, and devise better ones. An international perspective is helpful in gaining insight that would not be possible in the United States alone.
6. Passive strategies are much more likely to succeed than are those that require individuals or groups to alter their behavior (Etzioni and Kemp, 1972).
7. Traditional psychotherapy has not been demonstrated conclusively to be effective in reducing the occurrence of suicide among youth attempters, and there is no known method of detecting those in the general population who are at risk of suicide attempts or suicide itself. On the other hand, a large proportion (at least 20% and perhaps as much as 95%) of youths who commit suicide have a history of at least one psychiatric disorder and there are current efforts to identify characteristics that distinguish suicide attempters from matched controls (Holden, 1986).

RECOMMENDATIONS

Although the relevance to suicide prevention of many of the interventions discussed in this paper may be tenuous, certain principles are applicable and certain strategies may offer promise. Those strategies that appear especially promising are underlined; Table 2 summarizes some of the interventions by type of approach.

1. Interventions within the health sector, while of potentially great impact, require many modifications within the health system to be ready solutions. Primary health services generally have more to offer than psychiatric services (Hankin and Starfield, 1986), if for no other reason than psychiatric services are not widely available to children and youth, either geographically or financially. Another reason for the relatively greater importance of primary care as compared with psychiatric care is that childhood suicide is much less often associated with psychiatric symptomatology (such as depression) than is the case in adults. Behavior problems, which may be more likely antecedents (at least in some child and youth population subgroups), are more likely to be noticed and managed within the home, school, or, at most, the primary care setting (Behar and Stewart, 1981; Motto, 1984). Furthermore, many, if not most, adolescents who committed suicide had seen a physician recently (Felice, 1981).

   The contributions that could be made by primary care are three-fold. Instruments to screen children for behavioral and so-

Approaches to Suicide Prevention by Type of Intervention

	Health Systems	**Environment**	**Individual Behavior***
Societal Level	Improved access to services (hotlines)	Gun control laws and regulations	Assessment of fines on individuals who own weapons used in suicide attempts
	Societal commitment to assuring financial and organizational access to ongoing primary care and needed mental health referral services	Mandated installation of locked cabinets for lethal devices and products	
		More constructive television programming	
Services Level	Testing and dissemination of effective procedures to screen for behavioral problems related to risk of suicide	Educational programs, job training, provision of employment to improve the extent to which children and youth see value in planning for productive role in society	Availability of cabinets designed to make guns and other lethal implements & substances inaccessible
	Ongoing monitoring of the quality of services provided.	Greater availability of organized exercise, recreation, or arts programs	
Individual Level	Better recognition and management of individuals at high risk by virtue of overt behavior problems, high levels of morbidity, or suicidal attempts	Better recognition of individuals at risk by community resources, including schools	Opportunities for rechanneling dysfunctional behavior into constructive activities such as sports or the arts
	Better use of community resources (including home visiting educational services and recreational services) to involve children and youth at high risk of alienation, depression, or violent behavior		

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*In some circumstances, individual behavior may change the environment, as in the case of installation of smoke detectors. The critical step,however, is in the decision of the individual who is at risk to act to change the risk.

Table 2.

cial problems have been well tested and are now available, at least for experimental use (Hankin and Starfield, 1986). Some of the instruments have already been used in large, national demonstrations (Valdez et al., 1985), although in this case they were used for the purpose of detecting changes in health status rather than for screening. Priority should be given to the widespread testing of alternative devices to screen children and adolescents for serious psychosocial problems. Such testing should be conducted under rigorous protocols, and criteria for acceptance of a screening program should be set so as to achieve cost-effectiveness. Primary care could also be of value in advocating for programs of early intervention for children or groups of children who could benefit from them. Funding for health services research and evaluation should be provided to facilitate the identification of the most useful methods of intervention.

Despite their potential, health systems, including primary care, have little to offer unless they improve access to services, expand efforts in the behavioral arena, and capitalize on new technologies to recognize unusual patterns of morbidity and utilization among children. Greater commitment in medical education, in financing of care, and in monitoring the effectiveness of care will be required before the potential of health services can be approximated. Mental health problems are the most common medical problems in childhood and adolescence (Starfield and Newacheck, 1986). Much greater attention in undergraduate and postgraduate medical education to their epidemiology, cause, detection, and management is warranted. All programs of quality assessment and assurance should explicitly address the recognition and management of psychosocial problems whether they exist concurrently with somatic problems or by themselves.

Many insurance programs do not cover mental health services, impose large deductibles on coinsurance, or severely limit the number of services that can be reimbursed (Kasper 1986). All public programs for financing services (such as Medicaid) or providing services (such as Title V programs) should have mandated mental health benefits. All programs that receive governmental assistance (such as HMOs receiving contracts to provide care to designated populations) should include mental health services in their benefit packages. The effectiveness of these services, as well as services directed at somatic problems, should be regularly assessed with modifications made as indicated by the results of the assessment.

The potential for improved care that results from having an ongoing regular source of primary care should be exploited in the development of newly emerging "gatekeeper" arrangements. Although these new systems of care are being implemented primarily as mechanisms to reduce unnecessary referrals to specialty services, they have the potential to greatly improve the effectiveness of care (including mental health care and prevention of suicide) through the attainment of long term personal relationships between patients and providers. For such potential to be realized, however, mechanisms to regularly review access to services, comprehensiveness of services, quality of care, and satisfaction with care will have to be devised and implemented (Starfield 1986, pages 186-7).

2. Social stresses, many of which are amenable to reduction by concerted efforts, are unlikely to be substantially reduced within the foreseeable future. There is also growing evidence, however, that physical exercise can be used to promote well-being; such activities can be as effective as traditional psychotherapy for the treatment of moderate depression

or anxiety (Gerberich et al., 1985). Communities should be encouraged to develop and evaluate programs of sports, exercise, and recreation that are not only easily available but also actively encourage the participation of distressed and potentially distressed youth.

Despite these efforts, there will continue to be many suicides resulting from impulsive behavior following stress that is perceived to be unbearable; many adolescent suicide deaths are impulsive and unpremeditated (McIntyre and Angle, 1980; Holden, 1986). For example, in a study of 100 hospitalized cases of self-poisoning in New Zealand, only five patients stated that they obtained a specific substance with which to poison themselves; the vast majority ingested an available substance on impulse (Trinkoff and Baker, 1986). For these individuals, and for others who may be ambivalent about a suicide attempt, the availability of a ready mechanism to commit suicide is critical (Eisenberg, 1980). Successful suicide among youth is increasingly associated with the use of firearms and explosives, both in males and females, and in white as well as other racial groups (CDC, 1985, page 20). Therefore, reducing access to firearms and explosives is a major immediate priority. Controlling the sale and licensing of guns is the most straightforward approach. Less satisfactory but still useful alternatives include providing incentives to make household weapons and potentially lethal substances less accessible by providing deterrents to their accessibility. Incentives could be provided to contractors to include locked safes in homes that they design or build. All public housing should contain such a facility. Fines could be assessed on owners of weapons that are used in suicide attempts. Even if reducing access to this means of suicide were followed in time by an increase in other methods, time will have been bought, with reduced rates of suicide, until there are improved methods of detecting and managing those who are at risk of suicide behavior.

3. The advice of Haddon and Baker (1981) is eminently appropriate to the prevention of suicide. A combination of strategies should be attempted simultaneously. The interventions need not address the most obvious casual factor but there must be at least some evidence or reason to believe that the strategies will be effective. All phases of prevention should be included, and passive methods should be given preference. The most protection for the most people with the available resources should drive decisions about the choice of strategy, and all interventions should be evaluated.

Lack of knowledge about the etiology of suicidal behavior should not be the deterrent to attempts at prevention. The removal of the pump handle with consequent control of the spread of cholera antedated knowledge about the cause of cholera. Moreover, knowledge of the causal agent is not always useful, as was demonstrated by the increase in deaths from bubonic plague when attempts to eradicate the causative bacillus drove flea-carrying rats out of sewers into homes (Robertson 1978). The decision to undertake preventive strategies should be made according to the principles enunciated above: potential effectiveness, practicality, and cost/benefit calculations.

The design and implementation of a research agenda should be of high priority. Elemental epidemiologic data about youth suicide are lacking. Distribution by social class is largely unknown. Quantification of risks associated with substance abuse is not available, yet is important in understanding antecedents of suicidal behavior. Information about the extent to which suicide victims have sought medical care, the type of care sought, and the nature of the problems prevented and the management employed is unknown. Little if anything is known about the extent to which suicide is thwarted, and under what circumstances these unsuccessful attempters eventually succeed.

As suicide is a relatively rare event, case control studies are a useful strategy for research on the identification and quantification of various risk factors. They are also useful in evaluating approaches to prevention and treatment within medical care settings (Kramer et al., 1984). New approaches to research also offer promise. Meta-analysis, a technique for combining the results of several studies, is one such strategy. The conditions under which it is appropriate and the benefits of such an approach are summarized in Louis et al. (1985). Another promising strategy is collaborative research among medical practices. Collaborative research networks have been developed or are being developed across the country by organizations of family physicians (Wood et al., 1986) and pediatricians (Narkewicz, 1986); such research networks might be suitable for research to understand the distribution of suicide-related problems within the population that receives care from private practitioners.

Research would be greatly facilitated by the adoption of standardized systems for coding problems in primary care. One such system for characterizing mental health problems has been suggested by Burns et al. (1982). A more general system for all problems in primary care is being developed and tested in several countries of the world (Lamberts et al., 1984).

Last, but not least, there is an urgent need to plot a strategy for evaluation of all interventions that are attempted. Alliances between mental health researchers, epidemiologists, primary care physicians, and health services researchers should be forged to plot such a strategy for the prevention of suicide among youths.

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THE CONTRIBUTION OF SOCIAL SERVICES TO PREVENTING YOUTH SUICIDE

Jerry Silverman, Policy Analyst, Office of the Assistant Secretary for Planning and Evaluation, Office of the Secretary, Washington, D.C.

The Social Services Field

Social services are varied and are offered under many auspices: public, non-profit private, for-profit private. They are provided by agencies whose sole purpose is social services and by agencies whose primary purpose is some other field: health, public assistance, job training. Providers range from the very formal, such as a public agency, to the very informal, such as a self-help group. Social services can be middle class oriented or can focus on the poor.

The boundaries between social services and some other sectors is unclear. Mental health may be called a social service or it may not. Social services blend into many other helping fields.

Social services address a wide range of problems and populations. The list, which can go on indefinitely, includes child welfare; protective services for children and adults; supportive services for the aged and for the disabled; concrete services such as day care, homemakers, and feeding programs; drug and alcohol treatment; runaway services; recreation; teen pregnancy programs; and family counseling programs.

Among services funded by the Federal government are several major programs administered by the Department of Health and Human Services (DHHS) (dollars are Fiscal Year 1986 estimated expenditures):

- The Social Services Block Grant - $2.7 Billion
- Head Start - $1.086 Billion
- Child Welfare Services - $207 Million
- The Community Services Block Grant - $366 Million
- Foster Care - $507 Million
- Child Abuse and Neglect Program - $30 Million
- The Older American Act - $668 Million
- The Runaway Youth Act - $23 Million
- ADAMHA Service Block Grant - $490 Million
- Adolescent Family Life Program (teen pregnancy) - $14.6 Million

In addition, other major sources of social services funding and resources are other Federal departments, State and local governments, United Ways, other philanthropy, self-help, fees, third-party payments, and volunteers.

Social Services and Youth Suicide

The social services field, although generally not equipped to treat youth at risk of suicide, can contribute a number of perspectives to the problem. Among these are:

- **Population at risk** - Many social service providers see or serve troubled youth and their families. From programs that serve youth who have identified high-risk symptoms, such as running away, to programs that see many young people, such as foster care, the field has the potential to be a resource for identifying at-risk youth.

- **Targeting** - Social service programs are often based where the most serious social problems are found, in the inner cities and other low income areas. Probably more than any other sector, some social service providers see people who do not make it into other sectors. Although we do not know how the risk of youth suicide related to income, we can expect that the social pathologies of the poor are expressed in some part through suicide.
- **Interrelatedness of problems** - Comparing research on youth suicide with that of other problems of young people suggests that these problems have many origins in common. Family dysfunction is often a common risk factor. So, too, is a history of child abuse. Social services at its best has a holistic and multidimensional perspective.
- **Family focus** - There is a growing recognition in the field that a family focus is most important for helping young people. In child welfare services for children and youth, there has been a strong movement toward stressing the role of the natural parents. In runaway programs, the better programs now consciously direct their efforts toward involving parents. Social services can bring this perspective to youth suicide.
- **Networking** - Bringing a variety of providers and orientations together is central to the social services. In fact, coordination of services is sometimes called a social service.

Since each community should develop approaches to addressing the issue of youth suicide, the social service field in local communities can often play a key role in facilitating this process.

There are some limitations in the field that bear on serving at-risk youth:

- **Fragmentation** - Social services can be fragmented and narrow in approach. Too often, providers address only the problems that they are familiar with. A foster care program may not look too deeply if the placement is stable. A program working with an adult problem may not probe the problems of youth in the family. There are likely to be many young people at risk of suicide who pass through or near a social service program without anyone paying attention.
- **The invisible young** - Most programs, in the social services field and in other fields, do a poor job in reaching troubled youth. Teenagers are usually difficult and troubled youth are worse. If they are not the primary mission of a provider, it is most likely that they will be sloughed off. Among social services, this is usually the case in protective services, foster care, family services, recreation, and pregnancy programs. This is also true in health services, mental health services, and drug and alcohol treatment. Young people tend to be the forgotten population.
- **The inner city** - Whereas many social service providers are in the inner cities and other low income areas and serve poor families, as with many things, the poor tend to get an inferior array of services. Of course, we don't know how many poor kids commit suicide. It may be that suicide is a middle class phenomenon and homicide and drug overdose are a low income phenomena. Yet, programs that serve the poor need to be more alert to this problem.
- **Families** - Social service programs, just like other sectors, can do a much better job of incorporating a family focus. This is important both because it is through other family members that at-risk youth can sometimes be identified and because it may be that strengthening troubled families can save troubled youth.

Recommendations

1. The Department should take the lead in bringing together leaders from various social services disciplines to explore ways and to develop plans for (a) educating practitioners about youth suicide and (b) improving the targeting of existing services to potentially at-risk youth.
2. DHHS should use its dissemination mechanisms to circulate widely the approaches developed under Recommendation 1, as well as by other groups.
3. The Office of Human Development Services should make the development of effective strategies for identifying, in various social services settings, youth at risk of suicide a high priority under its Coordinated Discretionary Funds Program for Fiscal Year 1988 and for several subsequent years.
4. The Youth 2000 initiative should be used to disseminate promising approaches, such as those which would be identified under Recommendation 1, to energize the social services field toward youth suicide.
5. The Department and other organizations with local counterparts should encourage social services leaders at the community level to join with others in developing community-specific plans to address the problem of youth suicide.
6. The Department should ensure that some of its youth suicide research be directed toward determining (a) the extent to which youth at risk of suicide are the same children seen in other social services settings, and (b) the extent to which low income and minority youth are at risk of suicide.

PREVENTING YOUTH SUICIDE THROUGH EDUCATION

Edward A. Wynne, Ed.D., Professor, College of Education, University of Illinois at Chicago, Chicago, Illinois

SUMMARY

A number of questions underlie any efforts to enlist schools and colleges in suicide prevention programs. The questions include matters such as: what challenges for education are implicit in the rising youth suicide rates; are there current education practices contributing to the problem; what solutions have been proposed; what are the merits of such approaches; what solutions may be more appropriate; and how can desirable solutions be more widely applied?

Special significance should be attributed to the fact that the increase in youth suicide has broadly paralleled other striking, measured increases in youth disorder, e.g., homicide, out-of-wedlock births, and drug and alcohol use.

This paper applies an analysis founded on the work of Durkheim to interpret these developments. That analysis argues that the rise in disorder is generally due to a decline in the quality of environments surrounding young Americans. This paper suggests that those environments have become less communitarian, less powerful, and less able to guide, direct and control young persons in a wholesome fashion. A variety of changes that have brought this about are identified, and appropriate long term research strategies and intervention efforts are proposed. The implications of these measures for Federal policies in general, and Health and Human Services in particular, are indicated.

INTRODUCTION

This paper will focus on potential interventions and research in the educational sector to prevent youth suicide. Our knowledge about these matters is relatively incomplete. Therefore, the analysis necessarily involves elements of opinion, plus recommendations for further research to try to fill in the many blank spots. Since my charge is to be activist-this is the implication of "intervention"--I will offer prescriptions even when the current pool of information is inadequate to scientifically justify them completely.

Several questions arise when the issue of youth suicide and education is considered. We should list these questions, before considering the ways education and relevant research can moderate youth self-destruction.

- What challenges for education are implicit in the rising rates of youth suicide?
- Are there ways current practices in education are contributing to the aggravation of the youth suicide problem?
- What education-related solutions have been proposed?
- What are the implications and the merits of the education-related solutions that

have been proposed?

- What other solutions may be more appropriate, and why are they desirable?
- How can the desirable solutions be more widely applied in education?

The Problem

We must start with a trite, but essential truism: a sound problem statement is the first step to solving a critical issue. Unfortunately, in the area of youth suicide, this truism has often been ignored.

It has frequently been reiterated that we must moderate the youth suicide rate. The problem, presumably, is how to attain this goal. But this statement fails to recognize that the long term increase in youth suicide--it has been growing for about 25 years--is only one of a number of indicators of rising youth disorder (1). Of course, this rise in youth suicide is a terrible tragedy. But focusing largely on that phenomenon provides an inadequate perspective. During the same years that the youth suicide rate has been increasing, we have simultaneously witnessed remarkable increases in the rates of youth death by homicide, rates of out-of-wedlock births to female adolescents, rates of youth arrests and crime, reported levels of youth drug and alcohol use, and the frequency of adolescent premarital sexual intercourse. While some of these shifts affected minority youths more than whites--and vice-versa--the overall tendencies have prevailed for both young whites and minority groups.

One should not, or cannot, deny the importance of youth suicide per se. Still, it is significant that the absolute numbers of youths (and infants and adults) affected by the many forms of disorder just outlined, far surpass the number of youth suicide victims. The afflictions visited on these youth range, in severity, from death by homicide or bearing an out-of-wedlock child (or having been an infant born in such a situation) to dangerous experimentation with drugs or alcohol and low level delinquency.

All the preceding measured increases in disorder, over periods of 20 or more years, make allowances for changes in levels of the youth population. The increases are often in the 200+ percent range. For instance, the rates of out-of-wedlock births to adolescent white females increased 461 percent between 1940 and 1983--the most recent year for which data are available (2). It is also relevant that, over the same long haul, government programs at all levels to assist the young and improve education have generally grown in scope: the pupil/teacher ratio has improved; more and better trained counselors have been added to our schools; the number of years of higher education attained by typical teachers has increased; the average number of years of education (including higher education) attained per pupil has risen; and (with reference to out-of-wedlock births) the supplies of contraceptive materials and abortion resources available to young females have increased (3).

In many instances, these rates of youth disorder have attained their highest levels on record at this moment, or in the recent past (about 1980). None of these measures of disorder were nationally tabulated before the twentieth century. However, it is noteworthy that, to a degree, many of the measures are indirectly associated with urbanization. Since American urbanization has become more intense during this century, the recent apogees of these disorders may represent the highest points in our whole national history--since 1607. These disorders have increased at faster rates among youth than among adults. Over most of these same years, there has also been a steady decline in the academic ability of adolescents, as measured by scores on various objective academic tests (4).

Patterns of youth disorder--intensifying over the past 20 years--have also afflicted other industrial countries. This suggests that some overall phenomenon may be affecting youths in all "modern" societies. Such international developments were a major theme in a special report to the Organization for Economic Cooperation and Development. The two distinguished authors of the report, James S. Coleman and Torsten Husen, are perhaps among the world's most prominent researchers focusing on youth issues. They asserted, "There has been a long term growth in deviant behavior among youth in [these countries--including the United States]" (5). They concluded that a fundamental change had occurred in youth behavior that would not be corrected by an automatic revision to earlier conditions.

Potential Causes

There are no definitive data available, or widespread professional agreement, as to the causes or cause of the disorder. And it will take many years to untangle the variety of potential variables related to the disorder, e.g., mass media, family instability, the prolongation of formal education, changing popular values, shifts in sex role definition, changing patterns of school and college operation. However, it seems inherently implausible to assume that each of the many different forms of disorder are related to entirely separate and discrete variables: that suicide is clearly related to one pattern of variables, drug abuse to another discrete and separated pattern, sexual experimentation to a third, and so on. And it is implausible to assume that there is no significant overlap between each group of variables. Such a hypothesis also flies in the face of many earlier studies of multiproblem families, where complex interrelations have been found to prevail among different disorders and diverse causal factors.

If we wish to intervene in schools to moderate youth suicide, it is necessary to restate the initial definition of the problem: "the problem," as it exists for schools and other youth-serving agencies, is not particularly the rise in youth suicide rates; instead, the problem is the overall increase in youth disorder; suicide is "merely" one element of that increase. It is true that researchers, and government agencies may, for some purposes, focus solely on suicide, or sexual experimentation or drug use, or delinquency. However, responsive parents, teachers, or counselors do not operate in such a segmented manner. They must also consider such young persons vis-a-vis their activities regarding sex, alcohol, delinquency, academic competence, and overall social efficacy.

The preceding restatement of the general problem is buttressed by the available data about predicting youth suicide. Putting it simply, we do not know how to make efficient long-range predictions about which youths are at highest risk with regard to suicide (6). Experienced clinicians can make useful short-range (2-5 day) judgments about extraordinarily vulnerable patients. But assume that we try and develop criteria to try and identify youth at more long-range risk--youths who may attempt suicide in the next six months, or two years. As of now, it seems that such criteria will incidentally also identify vast numbers of youths who will not attempt suicide. In other words, a long term suicide prevention program focused on "potential" attempters will include high proportions of low-risk persons. These very same persons are also probably at risk for other forms of disorder, e.g., drugs, premature sexual experimentation. Under such circumstances, it would seem more logical to try to generally improve the emotional health of these pupils, as compared to solely focusing on their suicidal potential.

An implication of this problem restatement is that "suicide prevention" programs should not be primarily directed at preventing adolescent suicide. Instead, they should aim more broadly to holistically improve student mental health. And, if such programs are efficacious, one of their incidental effects will be to moderate the youth suicide rate. Naturally, any proposal for "holistic" improvement requires further definition. And this important matter will be considered in greater detail later.

One other element of the problem statement should also be considered. The restatement emphasizes the role of schools (and colleges) in moderating youth suicide, or overall youth misconduct. But, in addition to preventing disorder, we should consider that, since disorder has been steadily increasing, it is highly possible that the schools are now doing some things that are causing or aggravating the disorder. In other words, long term trends have been for youths to spend increasing proportions of their time in schools and colleges. Data disclose that these institutions have become increasingly impersonal (e.g., school and college size has increased, school district size has increased, more teachers are covered by union contracts, teachers have attained increased years of "professional" training). Could these changes in schools and education norms have actually aggravated the youth disorder situation? We must consider what schools have been doing that might make things worse. It may be more important to stop schools from doing bad things, as compared to persuading them to begin entirely new remedial activities.

One such current failing of our schools may be their failure to present to young adults optimistic interpretations of the world around us. A letter to the Editor in the *New York Times* offered striking evidence on this point (7). The writer was one of several judges for a national writing contest for high school seniors. The judges considered over 600 poems, plays, short stories, and other materials. Many of the pieces revealed substantial talent and commitment by the authors. The letter writer was distressed by the young authors' persistent fixation with suicide and nuclear war The tone of the pieces was extremely pessimistic. They provided a dramatic and distressing picture of the intrapsychic life of some talented adolescents. Of course, the students' high school literature courses were not the sole cause of their unfortunate fixation. However, from my impressions about what is sometimes taught in such courses, the subject matter often has an overemphasis on morbidity and other overly pessimistic elements. Too few such courses and teachers of literature strive to foster a wholesome optimism in pupils. (Contrast this pattern with the advice of Cicero: "Take care that the environment of the child is elevating, and allow only pure and ennobling examples to be reflected before him.") I realize that there are "objective" causes for distress about contemporary society and our world. However, even such judgments have many subjective elements. Thus, with respect to nuclear weapons, such weapons have existed for 40 years, and none have been exploded in anger since 1945. While no one should be overjoyed as to the existence of such devices, one could well say that 40 years of relative success augers relatively well for the future.

Education-Related Solutions Now Proposed

Some existing anti-suicide programs in schools are deliberately organized emergency efforts. These programs aim to assist students in particular schools to deal with the tensions generated by one or more local, recent, and well-publicized youth suicide incidents (8). Undoubtedly, such one-shot programs can be well or poorly managed. Moreover, we can benefit from evaluating the operation of some educators--perhaps at the State level--to design stand-by emergency support programs, for use in particular emergencies. But this paper will direct its focus on programs of deliberate, routine prevention, as compared to emergency intervention.

Essentially, the concept of a routinized suicide prevention program for schools currently envisages that discrete amounts of class time will be set aside for the consideration of certain anti-suicide materials (9).

Exactly what such programs should include is not widely understood. For example, one program description recommended that a program should "present facts about suicide in a manner that leads both to an understanding of, and an empathy with, the suicidal person and to an improved ability to identify and respond to those who may be in danger" (10). Such objectives are commendable. However, they are also so general as to leave enormous room for interpretation. Furthermore, the objectives are intermingled with critical, and problematic assumptions such as the assumptions that we can "teach" thirteen year olds to understand such activities, and that the benefits of this learning will be greater than the possible anxieties and distress they may generate.

The materials may either be taught by the students' regular teacher, or by a specialized teacher, perhaps certified in the area of health education. The programs are designed for either the elementary, junior high, or high school level. It is difficult to obtain evidence as to how many schools are now applying such programs. Still, it is safe to say that they are the subject of growing public and professional interest. In addition to such routinized in-school programs, some popular television and print media presentations on youth suicide have offered advice to parents and young persons largely congruent with the perspectives applied in such programs.

Given the importance of both the youth suicide issue and the in-school suicide prevention programs, it is natural to ask: "Do such programs work? Are they good things?"

Unfortunately, the available evaluative data are limited. To review the literature, a computer search was conducted in the ERIC system, under the headings "Suicide Prevention" and "Suicide Prevention and Evaluation." Several thousand documents and publications were identified. However, no evaluations of school-related programs were disclosed. Letters were sent to several persons prominently identified with school-based suicide prevention efforts. Through this means, one unpublished evaluation was identified (ll). That evaluation administered pre- and post-tests to 181 students who had taken a four-hour suicide prevention program in a California school. The instruments were also administered to a control group. The instruments measured attitudes and cognitive knowledge relating to suicide and also solicited students' opinions about the strengths and weaknesses of the program. The report did not indicate whether the students and faculty of the program were randomly selected, or if they were, in some way, self-selected. The report provided no description of the material presented to students under the subject matter of suicide prevention, nor was it clear what structures, if any, were established to determine what teachers in different classrooms were actually presenting.

The students and staff involved in the program almost all regard it as helpful. The measures of attitudinal change show that the participants in the program had moderate, but statistically significant changes (at the $p<.01$ level) in their attitudes in "favorable" directions--while the attitudes of the control group stayed constant.

It would be impossible to estimate the relationship between the attitude changes apparently caused by the program and any changes in the students' propensity towards suicide. As the report recited, "It would be presumptuous to expect that a youth suicide prevention program consisting of a relatively small sample and maximum of four hours of instruction would result in a reduction in rates of youth suicide." We should also note that even the question "What attitudes and information are most likely to prevent suicide?" is not now susceptible to a definite answer. For example, another interesting piece of research has reported a negative correlation between young subjects' degrees of "introspection" and their general level of efficacy (l2). It would be premature to determine whether such introspection was a cause or effect of inefficacy. Still, findings of this nature caution us about the problems of determining what package of information and values will actually foster desirable patterns in the young (13).

To sum up the matter of evaluation, one publication critical of in-school suicide prevention programs quoted Dr. David Shaffer, Chief of Child Psychiatry, New York State Psychiatric Institute, to the following effect:

> is significant that in an area where there's been a recent outbreak of

> youth suicide Westchester County in New York, in 1984 , they have a highly developed preventive approach. My view is that, faced with an increasing willingness to talk about suicide, coupled with increasing rates, there's reason to suspect the two may be linked. If you can assume you can lower the threshold of the vulnerable kids by making the act seem less bizarre, horrific, or unnatural, you might also predict that talking about suicide in a matter-of-fact way...would lower the taboo against suicide....I think people are making rash generalizations. They are not admitting to themselves how much knowledge they don't have and they're basing programs on that which may or may not be harmful, never mind helpful (14).

Other Programs to Change Pupils' Attitudes

Formal evaluations of educational programs directed at suicide prevention are scarce. Furthermore, the character of the programs proposed is relatively indefinite. There is little general agreement about what programs should contain, or what their thrust should be. Because of such uncertainties, there is merit in considering the other recent examples of in-school programs (not concerned with suicide) to change pupil attitudes and values. And there have been a variety of such programs. Their history may be instructive.

Drug education programs in schools are one prominent example. There have been many such programs, and they have often been evaluated. A thorough review of such evaluations--covering 20 years of research--concluded that the relationship between such programs and actual avoidance of drugs is only problematic (15). There is evidence of changes only in pupils' knowledge and, sometimes, attitudes. There is little evidence of programs moderating pupils' actual drug use. Again, most public schools, over the past 20 years, have introduced programs of "sex education." Many controversies have arisen over the contents and goals of these programs. It is recognized that during the spread and persistence of such programs, 'there have been notable increases in the levels of expressed adolescent sexuality, out-of-wedlock births, abortions, and venereal disease. Some critics have even contended that such programs, far from moderating adolescent sexuality, have even aggravated the problem (16). Finding clear evidence about such complex issues is as difficult as it is important.

The controversies around drug and sex education may provide a cautionary note. If there is not yet firm evidence about what works (or is even harmful) in those fields after 20 years, we should be pessimistic about rapidly taking constructive, properly evaluated steps in the area of deliberate suicide prevention.

We can also turn from the area of publicly controverted questions, to more "academic" disputes. Over the past 10 to 15 years, there has been interest among educators and researchers in a series of in-school programs aimed at constructively affecting pupils' values and attitudes. Popularly, such programs are referred to as "values education" (17). Professionally, some of the programs have been classified as "values clarification," and others as "cognitive developmental" in their approaches--and associated with the work of Lawrence Kohlberg and his colleagues. Values education programs are designed to be inserted into standard school curriculums, and be presented for 10 to 30 hours. And it is also generally recognized that the philosophies underlying values education have affected many other curriculum areas in schools. In effect, the contents of these areas have generally shifted towards being less supportive of traditional adult values. Because of such developments, the programs have excited considerable research and public controversy.

In general, the research has found that formal values education programs have sometimes generated statistically significant, but small, attitudinal changes in pupils' responses to pre- and post-tests. And oftentimes, the programs have had no measured effects. There is little or no evidence of changes is pupil conduct. There has been considerable difficulty in clearly characterizing what pedagogical practices relating to the programs have been effective or ineffective in particular classrooms. As for the controversy, the programs have been attacked in Congress, been the implicit subject of restrictive Federal legislation (the Hatch Amendment to the Elementary and Secondary Education Act), and been otherwise criticized both in accurate and inaccurate fashions. Speaking as someone informed about trends in elementary and secondary education, I would say that such programs, by now, are seen as a subject of declining interest. They have generated little evidence of desirable results and a great deal of controversy.

On a more positive note, there is evidence that anti-smoking educational programs and materials do affect both pupils' knowledge and conduct. But we recognize that the main point of such programs is transmitting certain cognitive knowledge, e.g., the bad things about tobacco. Furthermore, there is a genuine scientific consensus about the factual basis of anti-tobacco programs. In suicide prevention, students already know the one uncontroversial fact about suicide--it is forever. As for the other appropriate elements of such a course, we can predict there will be a medley of differing informed opinions. We are not sure what variables we can and should change, or how to go about it in any direct fashion.

Based on the preceding information, several general principles can be articulated about the development and evaluation of in-school suicide prevent programs--particularly programs designed to provide pupils with additional curriculum materials:

1. The programs should clearly articulate the hypotheses (and, to the extent possible, the research base) on which they are grounded.

2. The programs should identify the problematic or controversial elements of their approaches.

3. The programs should be specified with enough precision so evaluators and users can determine whether the designers' directions are being followed.

4. The program designers should specify their criteria of success. Where such criteria are not as direct as lowering the rate of youth suicides (and this will often be the case), a justification should be provided for the proxy measures recommended.

5. The program designers should indicate some general familiarity with the voluminous previous research (briefly summarized herein), regarding other programs to change pupils' values, and indicate ways their proposals are similar or different from such programs.

6. Program development should be paced to permit users to take advantage of the predictable feedback from formative evaluation.

Being More Holistic: An Environmental Approach

The preceding discussion has focused on discrete programs, essentially directed at preventing youth suicide. But there has also been mention of more holistic approaches. Such approaches can be characterized as "environmental" in their thrust. They would consider the total environment of the school, during the whole period of a student's attendance and enrollment. They would be concerned with generally moderating all forms of youth disorder--as compared with focusing particularly on suicide--and being time-limited. In effect, this approach would strive to improve student mental health by making sure the total school is a wholesome emotional environment. The approach would not necessarily rule out appropriate, discrete, well-conceived courses in suicide prevention; however, such brief and limited activities would be of limited importance, compared with the general efficacy of the whole, continuing school environment.

The environmental approach is not novel. Many educators and social scientists have criticized emotionally dysfunctional elements in contemporary schools, and offered appropriate proposals to form more constructive environments.(18)

Few authorities on the environmental approach have directly considered the relationship between better or worse school environments and youth suicide--although some commentators have made such connections (19). The authorities have generally applied more expeditious measures of school efficacy, e.g., student rates of cognitive learning, levels of pupil discipline. Furthermore, the authorities have not been suicidologists--persons largely concerned with the issues of youth suicide. They have typically simply lumped youth suicide among a medley of problems encompassed under the rubric of increasing youth disorder. Finally, the application of suicide rates as an evaluative variable is complicated; since the incidence rate of suicide in one or several schools would be relatively low, researching the relationship between suicide and school environments provides serious technical challenges.

It is significant that an environmental approach is consistent with the work of the nineteenth century French sociologist Emil Durkheim (20). Putting it succinctly, Durkheim proposed that, in Western society, suicide is an affliction largely caused by not feeling immediately needed by others. Thus, when we reflect about the pressures that impel adolescents towards suicide, Durkheim would say that the preponderant pressure is that of not being immediately needed by other human beings. While Durkheim's analysis was directly focused on suicide, its rationale can be easily adopted to other forms of disorder. Thus, he would propose that young people engage in promiscuous sex or drug use because they don't feel themselves immediately necessary to the people around them; they seek reassurance by means of casual sex and pregnancy, or through the withdrawal provided by drug use. Durkheim did not contend that such estrangement is the sole cause of suicide. However, his theory has special relevance for the current situation--where many forms of youth disorder have been increasing, while the social environment around the young has simultaneously been dramatically changing.

A personal friend told my wife and me a story which nicely illustrates Durkheim's theory. This friend, a female, recalled how some years back, she had been in psychotherapy. At the same time, she was getting divorced, was the guardian of a young son, and was afflicted with serious emotional distress. During one therapy session, in a moment of despair, she remarked to the therapist, "I guess I might as well kill myself. There seems to be no other way out of this situation." The therapist cooly responded, "That's too bad, since you realize that the children of adults who have committed suicide tend, themselves, to become suicidal." Our friend responded, "Gee. That takes care of that. Guess I'll have to live." It's one thing to choose to extinguish one's own life; it's another matter to selfishly leave an infant to whom you have given birth exposed to the vicissitudes of the world, and especially to render him subject to suicide. Durkheim's point is that our tangible, immediate responsibilities to others help us to want to stay alive.

The data underlying Durkheim's analysis have been attacked by later commentators, partly because of his necessarily primitive statistical techniques (21). Despite such criticism, it is evident that Durkheim's overall theory still has substantial validity. Thus, even in our era, suicide is more related to wealth than being middle-income, to bachelorhood than marriage, and to female childlessness than motherhood--just as Durkheim originally argued (22). In other words, being at suicidal risk may be more a function of not being immediately and personally needed by others, as opposed to being nonaffluent, or suffering the constraints of marriage or the tensions of childrearing. None of this is to say that all bachelors commit suicide, or that no mothers do. Durkheim's proposition was probabilistic: when the conduct of large numbers of persons is analyzed, the persons with more elements of vulnerability--of perceived irrelevancy--would be more likely to commit suicide, and vice-versa.

Durkheim's analysis provides an important perspective on the issue of contemporary youth disorder. After all, if not being needed makes one prone to self-destruction, being "useless" might also make people prone to other irresponsible acts of self- or other-destruction. The state of "being needed," in a sense, is a metaphor for being surrounded with supports and constraints. Durkheim's analysis also provides us with a framework for considering integrated remedies, as well as identifying existing in-school causes for suicide.

Useless Youth

It is easy to see how American adolescents and children have become increasingly irrelevant in the ordinary affairs of adult life. We have had a long term decline in the proportion of children and adolescents living on farms and in small rural communities--where young people often had substantial chores to do to help their families. There has been a decline in family size and the tradition of older brothers and sisters caring for their siblings. Homes have become increasingly filled with cleaning, cooking, and food preparation equipment--and more families eat out--so the proportion of household chores for the young has been moderated. The average number of years young Americans spend in school and college has steadily increased--and school is necessarily an environment where young people are segregated from the immediate responsibilities of typical adult life. The effects of such in-school isolation have been intensified by the increasing sense of emotional distance that has developed between faculty and pupils. Because of this distance, students see their lives as further isolated from typical adults and adult values. It is not so much that the pupil/teacher ratio has gotten worse--there are really more adults now serving pupils than in the past. However, the increased size of typical schools and colleges, and the increased levels of departmentalization and depersonalization have led to more formal and transitory relationships among adults and pupils (and even among many pupils) (23).

We also cannot ignore the role of values in providing young people with principles that give relevance to their conduct. (It is not coincidental that Durkheim also wrote an important book called *Moral Education*) (24). The acceptance of certain general values enables young persons to attribute relevance to particular conduct; and, thus, such conduct becomes more satisfying to them. This matter of the attribution is nicely illustrated by the old story of the three men chipping a block of stone. When asked what they were doing, one replied, "Chipping a stone," the next, "Carving a statue," and the third, "Building a cathedral." Our personal interpretation of our conduct--whether it seems trivial or magnificent--largely comes from the information transmitted to us by our environment.

The topic of shifts in popular values over years is susceptible to objective discussion. One can eventually present data about trends in values, just as one can measure shifts in the rates of death by suicide, or changes in the average size of schools, or the number of years education received by typical pupils. But, given the space limits of this paper, one must necessarily be more summary. But the matter of shifting values should not be by-passed, since values and attitudes are important components of suicidal conduct.

I propose that, over the intermediate past, young Americans have been increasingly surrounded with values that attribute a heightened legitimacy to at least a moderate level of relatively trivial hedonism: the models provided by the media; the unwillingness of many adults, or adult institutions, to

School and College Policy Changes Which Have Affected Youth Feelings

Change	Effect on Conduct	Effect of Feelings
More segmentation in school academic programs; specialized teachers; students progressing through several schools; larger schools; more diverse courses; and more varied programs.	Pupils have less continuous contacts with each other and/or particular teachers.	Pupils do not feel close to the children and adults around them.
More segregation of schools from families; schools more remote from homes, e.g., bussing; more different schools for individualized families to relate from, and larger schools with more different families to relate to.	Schools more likely to encourage values dissonant with family traditions.	Pupils do not feel at ease with (a) the values of their school and/or (b) the values of their family.
Greater disassociation of pupils from teachers; specialized, subject-oriented teachers; assumption of mentoring roles largely by school counselors.	Adults regularly working with pupils in schools (i.e., teachers) less likely to become engaged with pupils.	Pupils are surrounded by many adults (i.e., teachers) who do not want to be engaged with them, and by some adults (i.e., counselors) who say they want engagement, but who manifestly cannot and perhaps should not undertake such engagement.
Toleration of higher levels of pupil indiscipline; changing adult value structures; judicial decisions; and less engagement between pupils and teachers.	Educators less able and willing to supress pupil anti-social and disordered conduct.	Pupils are prone to participate in or be victimized by school-related disorder.
More in-school responsibilities assigned to adults; less authority granted to pupils over other pupils; and more school maintenance and chores assigned to adults.	Pupils provided with fewer occasions to feel needed by their schools and by other pupils and adults.	Pupils feel less "related" to their school or pupils or teachers.
Less concern for the ceremonial and community-building aspects of schools; court decisions supporting individual rights versus symbolic activities (e.g., salute to the flag, semi-religious activities); college entrance criteria focusing solely on academic test scores, and deprecation of the value of "school spirit."	Schools are less able to rely on powerful and traditional means of building sense of collective unity.	Pupils feel less "related" to their school or pupils or teachers.
Less authority for school administrators to compel teachers to work as team; teacher unionization; and court decisions strengthening tenure and "teachers rights."	Principals and other administrators have less ability to encourage teachers to promote appropriate values.	Teachers feel less related to other adults in schools, and pupils feel disengaged from teachers.
Young people tending to spend more time in school and college, as average levels of years of attendance steadily rise.	Youths spend increasing lengths of time in an environment where it is inherently hard for them to be "needed"–compared to typical work site.	Pupils feel irrelevant for longer periods of time.
Growing proportions of alientated and highly individualistic curriculum materials, e.g., literature and readings which overvalue deviant and alientated conduct and persons.	Harder for pupils to see themselves particularly in traditional life patterns; thus, they feel irrelevant.	Pupils feel more uncomfortable about choosing among alternatives ahead in adult life, e.g.,should they be superwomen, should they be males who keep house, should they choose not to be married and rear children.

Figure 1.

assert strong, direct control over youth conduct; the secular and relativistic themes pervading many formerly traditional religions; the rising adult divorce rate, which evinces a higher evaluation of personal fulfillment than other, group-oriented values; and the popular unwillingness to reinstate the military draft, partly on the grounds that it would be an unjustified imposition on the young (25).

The values transmitted by such patterns make it harder for young persons to comfortably commit themselves to goals congruent with wholesome adult life (e.g., applying themselves to learning, maintaining sexual chastity, obeying legitimate authority). Furthermore, even when young people engage in such constructive pursuits, they often receive only moderate reinforcement from significant adults. Finally, the undermining of traditional adult values among the young makes many young persons vulnerable to temptation by self- and other-destructive values systems (e.g., drug and alcohol abuse, irresponsible sexual experimentation, enlistment into dangerous peer groups). In sum, all too often the young either unenthusiastically engage in doing right, or fall into risky misconduct. Neither of these alternatives is emotionally sound. While it is unquestionably better to do right rather than wrong, even doing the right thing is unrewarding when the prevailing structure does not reinforce such conduct.

The general information about school and college changes that have affected pupil feelings is outlined in Figure 1 . The relationship between such changed feelings and patterns of youth disorder have been explicated in the preceding discussion.

A striking cross-cultural survey suggests some of the roots of the peculiar emotional tensions now facing many young Americans. The survey compared the different reasons given by parents in Mexico, South Korea, and the United States for having children. The patterns of answers are in Figure 2 (26).

Evidently, American parents are more concerned with getting emotional gratification from their children than are parents in other, more traditional cultures. From a Durkheim perspective, this is disturbing. The data mean that American children are largely needed by their parents to make them happy. Unfortunately, acting to make others happy provides ambiguous and obscure objectives for human conduct. It is hard to say what typical American children and adolescents should do to really satisfy such a parental

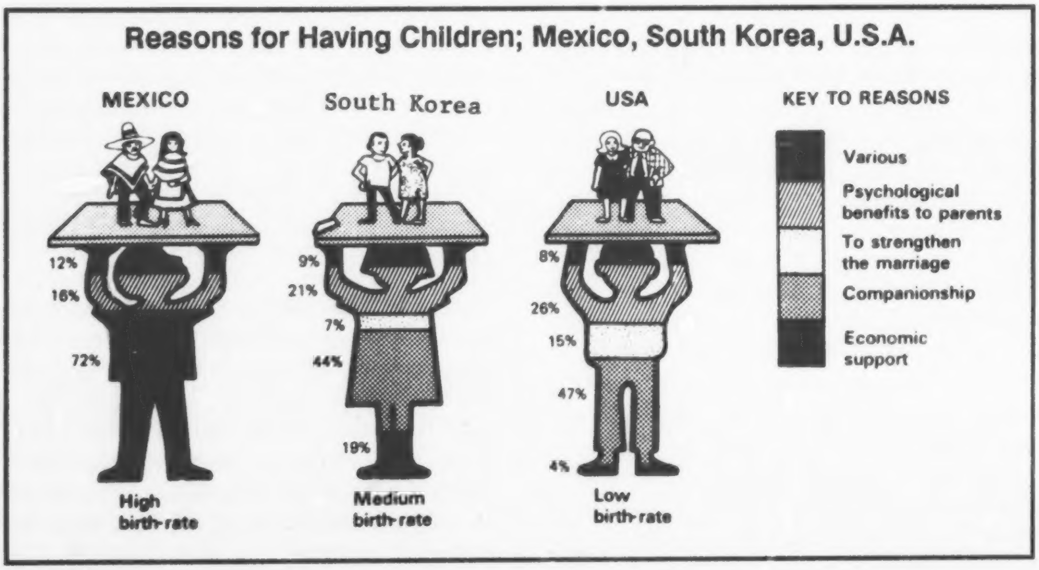
Reasons for Having Children; Mexico, South Korea, U.S.A.

Figure 2.

need. Obviously, parental happiness is generated by the overall, long term competency and affection of their children. But the pursuit of such a long term goal inevitably generates innumerable tensions around short term and intermediate issues. And it is hard to tell what short and long term goals are appropriate. Indeed, a depressed American child may even conclude that his death, in the long run, may even add to family happiness by ridding the family of an evident disability. Contrarywise, in more traditional situations, children encumbered with responsibilities for chores, caring for siblings, and even with the burden of maintaining family prestige (through acting lawfully) know they are immediately needed.

The typical goals of contemporary American families for child-rearing provide relatively ambiguous guides regarding discipline and parent/child responsibilities. Too often, many American parents withdraw from imposing responsibilities or discipline on their children, since such engagement leads to tension (and unhappiness for the parents). Conversely, parents in more traditional situations impose responsibilities and discipline just because their children serve certain immediate, tangible family needs.

Recent Improvements

In the recent past, we have been blessed with a moderation, and even a decline, in certain measured rates of youth disorder. For instance, the rate of death of young white males by homicide began declining in the year 1980, and the youth suicide rate has stopped rising. Interestingly enough, a Durkheimian approach can even provide an explanation for such fortunate improvements. Readers will probably recognize that recently, there has apparently been a mild increase in the appeal of traditional values, e.g., patriotism, among young and adult Americans. This shift approximately coincides with the improvements in the rates of disorder. Presumably, Durkheim would say that the reinvigoration of traditional values represents a heightening of the bonding forces throughout the country. The resulting sense of "relatedness" would foster the rise in orderly conduct--since, when we are related to others, our conduct is more necessary to them. It is also noteworthy that the improvements in conduct occurred during just the years when funding for many social programs has been lessened.

I would not forecast an indefinite increase in such improvements due to raw ideological change. Too many of the social arrangements and values affecting our young have continued to follow their previous patterns--many of our youth-serving institutions, popular media, and family values still apply principles which became prominent during the 1960's and 70's, and even earlier. In the final analysis, the minds of young persons are shaped by both tangible social arrangements and ideas.

Since evaluation has been an important theme of this paper, something should be said about the formal evaluation of the preceding pro-Durkheim position: do the data indicate that contemporary young persons from more traditional environments are less likely to commit acts of disorder than young persons from more advanced environments? In a careful analysis Carlson conclude "Yes, that's what the data say" (27). But this answer must be extremely qualified. Statistically speaking, "traditional families" are the composite of a large number of elements: stable, two parent families deeply involved in traditional formal religion; families in rural areas; families whose children usually attend certain types of public or private schools; and families which apply particular values in their home.

Because of the many characteristics underlying the concept of "traditional," we rarely directly compare wholly traditional versus wholly modern families. Usually, we consider the interrelationship of particular variables, e.g., intact, two parent families; families who regularly apply certain values; families who maintain certain religious practices. In general, the data do show that children in environments associated with such variables display lower levels of disorder--e.g., drug use, delinquency, out-of-wedlock children--than more modern families. Many of the studies reported by Carlson--for understandable reasons--do not explicitly apply to youth suicide. But one or two of them did make that connection, and the general thrust of his overall evidence is also relevant. (Incidentally, it is also true that children from some very lower class groups, e.g., the "underclass," display very high levels of disorder; it is interesting to speculate whether such children come from pre-traditional or post-modern environments.)

In sum, the data generally show that a Durkheim analysis is an appropriate tool for attacking the problem of youth disorder. This does not preclude further, and more focused, research. In the meantime, some corrective measures must be taken by schools and colleges, because of the pervasive and serious nature of the problem. And Durkheim's hypothesis is a useful tool for identifying remedies affecting education--and even identifying problem-aggravating policies now being applied in education.

Constructive Educational Environments: The Specifics

The characteristics of wholesome educational environments can be specified theoretically, and also from a moderate body of site research--though, as mentioned, this research has not been focused on the topic of youth suicide (28).

The environments are managed probabilistically: a body of principles is applied, but not always with 100 percent consistency, nor do the principles always succeed. These principles (derived from the current theory and research) are summarized:

1. Adults clearly maintain responsibility and authority for school management.

2. The school is dedicated to fostering cognitive learning, good discipline, and wholesome pupil emotional development.

3. Pupils are put under significant pressure to actively pursue the goals established by the school.

4. The adults in the school work together closely to attain its goals, and accept the leadership of an effective and dedicated principal.

5. Pupils spend substantial periods of time in discrete, smaller, persisting groups, under general adult direction; such groups foster both learning and emotional support; the groups, depending on the ages of the pupils, can take a diversity of forms, e.g., self-contained classrooms, homerooms, athletic teams and other extra-curricular activities.

6. Pupils are given a sense of being needed by being encouraged and required to perform a variety of activities of service to other pupils or to the local community.

7. The school maintains a powerful system of reward and punishment, which encompasses academic learning plus good and bad pupil conduct.

8. Pupils, depending on their age, have notable input in school policies; however, such input is directed into discrete areas, appropriate to the maturity of pupils, and the inescapable responsibilities educators must accept.

9. The school maintains relative pupil and staff stability, and keeps both categories of persons under its umbrella for periods of years.

10. The school uses ceremonies and rituals as one means to enhance the sense of community of the pupils, staff, and often times, parents.

11. The preceding goals and practices are generally understood and accepted by almost all adults and pupils concerned with the school.

The development of a good school environment is only moderately related to the economic resources available to a school or community. The environment is more determined by the community values in which the school is embedded, and the values and abilities of the key adults setting school policies. For example, without an appropriate vision of school policies, extra money available to the school may simply be spent to increase the number of elaborately trained (and costly) specialists working in the school; and these may simply lead to greater fragmentation in adult-to-adult and youth-adult relationships, or in interprofessional conflicts about school priorities.

Apropos of specialization, I recall some research of mine in a highly reputed, well-financed suburban public high school. The school's social workers believed they should not tell parents if their children were using drugs; they felt that the confidentiality principle should be applied. Eventually, the principal became concerned, since some drug-using pupils were seriously at-risk. Then, the school hired a highly skilled staff member whose job was to by-pass the social workers, and discreetly tell parents if he and the principal deemed a certain pupil was engaged in serious substance abuse. Eventually, after several years, the school decided that all pupils known to be illegally using drugs or alcohol would automatically be reported to parents and the police. The costs of the "anti-drug" program dropped 50 percent.

Research and Policy Recommendations

1. There is insufficient information now available for the Federal government to clearly approve any particular focused program of school-related suicide prevention.

2. The government should clearly and publicly recognize, as a policy matter, that the issue of increased rates of youth suicide is quite possibly related to other notable increases in rates of measured youth disorder. This likelihood should be stressed in public statements, research and evaluation proposals, and the dissemination of information.

3. The government should fund research directed at the design and evaluation of discrete, experimental programs of suicide prevention, presenting predetermined curriculums. This process should keep in mind the qualifications recited earlier in this paper.

4. The available research data indicates that wholesome school environments, as described earlier in this paper, are generally benign in their influence, though their particular effects on suicide are not yet known. However, one can offer a defensible hypothesis about the beneficial effects of such schools on youth suicide, and the effects of the schools are otherwise desirable. Therefore, government policies should encourage educators and other concerned persons to move towards transforming "environmentally disordered" schools in appropriate directions.

5. The government should fund research directed at more precisely determining the relationship between wholesome school and college environments and diverse forms of youth disorder, including youth suicide. Parallel research should also explore the potential relationship between existing "undesirable" school and college environments (recited earlier in this paper) and increased disorder.

6. The government should fund data collection, research, and theoretical analysis directed at exploring the potential overall causes and correctives for our long term rise in youth disorder (i.e., causes not related to education policies).

7. The issue of youth disorder cuts across many institutional and disciplinary lines of jurisdiction. The government, in giving this topic greater priority, should strive to insure that these inevitable boundaries do not frustrate collective engagement with a real world problem, whose effects inevitably transcend such boundaries.

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INTERVENTIONS IN THE MEDIA AND ENTERTAINMENT SECTORS TO PREVENT SUICIDE

Alan L. Berman, Ph.D., Department of Psychology, American University, Washington, D.C.

SUMMARY

The print and broadcast media have neither taken explicit actions nor devised specific guidelines to address how they might work to prevent youth suicide. In part, this reflects a conflict inherent in formulating guidelines for media coverage of the news. The news media see their role as defender of First Amendment rights and the public's right to know, not as vehicle for social change. In addition, there has been no attempt to evaluate the effectiveness of these public service activities which the media do attempt.

Those social and behavioral scientists who have examined the possible role of the media in contributing to youth suicides have focused on the media primarily as a negative influence, particularly with regard to the impact of violent and aggressive stimuli on the young. The result has been a generally defensive and adversarial relationship between the media and the social sciences.

An effective strategy for change should aim to increase collaborative efforts between the social science community and the media to (a) identify the problem and (b) develop voluntary, coordinated attempts at solutions. Specific steps include the following:

1. Conduct research into identifying the problem and the specific mechanisms by which any media models present a negative influence for imitative behavior.
2. Increase awareness among media decisionmakers of the potential role of the media in youth suicide, thereby increasing their sensitivity to the public concern and facilitating the development of voluntary guidelines.
3. Use the media to present models to solve problems, give information, and educate.

INTRODUCTION

Suicide is an intensely complex, personal event mediated by a number and variety of forces ranging from psychological to sociological to biological. As a significant part of the sociocultural milieu of today's adolescent, the mass media serve to increase the attention given to youth suicide. For example, by 1970, one out of every eleven commercial films produced in the United States included a suicide, almost three times the proportion in evidence in the 1920's (1). Furthermore, it has been estimated that today's high school senior has been witness to approximately 800 suicides on television (2).

Several recent studies have suggested that news (print and television) and dramatic (television) presentations of suicide can cause significant increases in suicide (3,4). The extent of this increase is similar in magnitude to that caused by unemployment (5).

If only because of the great potential for impact on youth suicide, the role of the media must be a significant focus in developing a system of preventive interventions to attenuate the risk of youth suicide. This paper reviews what is and what is not known about the impact of print and televised suicide stories, then presents a survey of current policies and practices about the coverage of suicide by these media. Last, this paper explores potential interventions for decreasing the precipitating influence the media may have and for using the media more effectively as a prosocial influence toward this end. After reviewing the obstacles to implementing these interventions, the paper addresses specific strategies for implementing the recommended interventions, including the formulating collaborative goals between behavioral scientists and media representatives.

Review of Research: What is Known?

Two earlier DHHS Task Force papers on youth suicide and the media (6,7) outlined the research to date on media effects.

Coverage of Actual Suicides

With regard to the print media, two lines of research have been pursued and reported: (a) comparing suicide rates during periods of normal news coverage of suicide and periods of no coverage because of newspaper strikes, and (b) examining the effects of specific suicide information on observed suicide rates.

Newspaper Strikes: The absence of print media, therefore the absence of news about suicide, appears related to a specific effect: a decline in youthful female rates of suicide. Motto (8) first reported no significant differences in rates of suicide in seven U.S. cities during newspaper strikes when compared with rates during years when there were no strikes. However, a followup study within a single city (9) noted a significant decline in the rate of suicide among women under age 35. This finding was partially replicated by Blumenthal and Bergner (10), who noted a significant effect only for women under age 35.

Newspaper Coverage: Research findings have been more consistent in relating the presence of information about suicide to observed increases in aggregate rates of suicide. Barraclough, Shepherd, and Jennings (11) found a significant association between published reports of coroners' inquests into suicide and later suicides among males under age 45. Phillips (12-15) has shown that U.S. suicides increase just after front-page suicide stories (the Werther effect). This effect (a) is proportionate to the amount of publicity given, (b) occurs primarily in the geographic area where the story was published, and (c) occurs after other forms of violent (and perhaps disguised suicidal) death (i.e., motor vehicle accidents and noncommercial plane crashes).

Wasserman (16) and Stack (5) have validated the Werther effect and describe it with greater specificity: (a) stories about celebrity suicides have the greatest impact on subsequent rates of suicide, (b) stories about entertainment celebrities have the most effect, and (c) those most likely to be affected are people of similar social role (to the model). Thus, in Los Angeles County, there were anecdotal, but unverified, reports of increases in young female suicides following the suicidal death of Marilyn Monroe and in young male Chicano suicides following the suicide of Freddie Prinze.

Nonfictional Broadcast Presentations

Bollen and Phillips (17) replicated their studies in the print media by demonstrating that significant increases in suicides also followed televised news reports of suicide, an effect that lasted for a period of about ten days. In the most recent of these studies, Phillips and Carstensen (4) found this effect to have a significant impact on American teenagers. The average increase in completed suicide during the first seven days after presentation of either nationally televised news or feature stories about suicide was 2.91 deaths. Additionally, they reported that the increase in suicides was greater, the more networks carried a story (i.e., amount of publicity); the increase was most notable for

best copy available

teens (versus adults); and the increase was equally significant whether the presentation was a specific news report or a general information or feature story. In addition, Littman (19) studied the temporal relationship between suicide-related newspaper reports and subsequent subway suicides in Toronto and was unable to document such a connection. For that matter, while consistent with these observations, even the reputed rash of suicides following publication of *The Sorrows of Young Werther* remains unconfirmed. However, the exact role of media coverage requires further research. Some researchers have questioned the validity of Phillips' methods and findings (18).

Fictional Broadcast Presentations

Holding (20,21) reported on the impact in Edinburgh of an 11-part weekly television series, "The Befrienders," which depicted a suicidal person helped by the Samaritans. He documented a 140 percent increase in referrals over the subsequent year, but no change in the number of attempted suicides treated at/by the city's hospitals. The effect on suicidal (and undetermined) deaths (22) was inconclusive, according to a ten-week pre-post series comparison.

Gould and Shaffer (3) recently reported on the impact of four fictional, made-for-television movies dealing with suicide and broadcast in the fall and winter of 1984-1985. They found in the two weeks after these broadcasts, that there were significant increases in the number of attempts among youth receiving hospital services and a significant excess of completed suicides when compared with the number predicted for their metropolitan New York Study area. Ostroff, et al., (23) as well, noted significant increases in adolescent admissions to a suburban Connecticut psychiatric emergency service due to suicidal overdose in the two weeks following presentation of one of these films.

The effects of this same film were more intensively investigated on a national level by Berman (7). Using a two-week pre-post comparison of medical examiner records from nine metropolitan centers, Berman found no differences in total suicides, youth suicides, or suicides by carbon monoxide (the method used in the TV film). However, his study did document a shift in the proportion of youth suicides by carbon monoxide. Psychological autopsies of these suicides after this film's presentation, however, suggested that significant predisposing factors were present in each of these suicides and that only two of five observed suicides were known to have even watched this television model. It was not clear whether the three other suicides saw or received information about the televised film.

What Needs To Be Known?

The research to date leaves either unanswered or inadequately addressed a number of important questions. These questions about how media coverage of suicide affects young people must be answered before making decisions about how such coverage should be limited or modified.

The following is merely a partial listing of some of these questions:

1. Are there possible beneficial outcomes to presenting suicide stories? If so, how might these be measured and weighed against the possible harmful effects of these stories? Increased referral rates and contacts to telephone crisis centers have been noted following televised movies on suicide. If such emergency room contacts for suicide attempts after the presentation of televised movies are nonlethal attempts to seek help, these movies may actually be beneficial, in bringing to treatment young people who might otherwise go without help or even commit suicide.
2. What is the true magnitude and duration of the effects? Are some of the suicides that follow these presentations suicides that otherwise would have occurred at a later date due to some other precipitant? Time series analyses have not been conducted over sufficiently long periods of time to answer these questions, since

suicides that occur many months after a reported suicide may bear clear connections (e.g., through hoarded archives of newspaper articles about initiating suicides). In addition, clearly, not all young people who receive media stimuli respond with imitative behavior. How can these other types of impact be measured? How can we identify those young people most likely to react to the precipitating stimuli?

3. What are the specific mechanisms and pathways for any observed effect? As noted by Gist (24) (see Appendix), the theoretical mechanism for this effect is multifactorial. Intensive psychological autopsy studies of subsequent suicides, in contrast to sociological or epidemiological studies, are needed to better assess why some individuals, and not others, are so influenced. If subsequent suicides did not actually view the televised model (7), were there other indirect ways that the televised models might have influenced them?

4. Are there specific features of these presentations (e.g., content, amount of coverage, neutrality vs. glamorization, etc.) that determine whether the presentation's effect is harmful, nonharmful, or even beneficial?

   There are significant questions about the observed effects of specific televised movies. For example, in the Gould & Shaffer study (3), one film with a significant post-presentation increase in completed suicides actually modeled proactive behavior by the adolescent who successfully talked his father out of attempting to take his life. Two other films, each with considerable attention to providing concurrent educational and preventive information to the potential viewing audience, had quite different consequent responses in observed suicidal behavior. Previous recommendations for not covering suicide stories or not presenting suicide dramatizations rest on assumptions about how these presentations cause an effect. These assumptions may appear valid, but they are unproven. Without more proof, their acceptance is unlikely.

5. Is there evidence to support arguments for more preventive activity on the part of the media? Presenting approaches to suicide prevention is costly and likely not to be viewed as worthy of effort by the media without both a research foundation and consumer support for such attention.

Obstacles to Implementation

Even if social scientists were in complete agreement that media presentations of suicide stories caused imitative deaths, this consensus by itself might not affect the presentation of these stories.

The media operate free from government-imposed standards and regulations. Any attempt to apply standards raises the threat of repressive censorship. This, in turn, could prompt a vigorous counter-reaction and vocal defenses of First Amendment rights. Self-imposed, industry-wide standards, in the form of codes of ethics (e.g., Code of Radio and Television Practitioners; Code of the Society of Professional Journalists) are written quite generally and essentially affirm "the public's right to know..[as] the overriding mission of the mass media" (25). More recently, (March, 1982) codes such as that of the National Association of Broadcasters have been abolished by court order as a violation of antitrust statutes. The result is that all issues of practices and standards, all decisions about how to present news or feature stories, vary from paper to paper, editor to editor, network to network, and local broadcast station to local broadcast station.

The position of the media perhaps can be illustrated best through their actual behavior and procedures. To clarify these behaviors and procedures, I conducted a brief standardized interview in early October 1986 with the managing editors (or their equivalents) at 15 daily newspapers. These 15 papers were selected randomly but stratified according to criteria of geographic diversity and as representative of a range of circulations, five papers each at three levels: (a) large metropolitan (300,000+), (b) small city (40,000-99,999), and (c) rural (less than 39,999).*

The telephone interview asked questions about the criteria for the placement and amount of coverage given a news story and how these applied specifically to decisions made about coverage of suicide events. Responses were categorized thematically and, where relevant and possible, quantified by circulation size.

Placement and amount of coverage afforded a story generally are governed by the "newsworthiness" of a story. Newsworthiness is subjectively defined, determined by judgments about the story's perceived interest, importance, and/or significance to the readership and/or by the number of people affected by the story. A particular suicide is newsworthy, therefore, if the perpetrator-victim of that suicide is newsworthy (i.e., is important, has prominence, etc.). Thus, the very kind of suicide report implicated by social science research as stimulating subsequent imitative events is the one most likely to be both deserving of report and reported on by the print media. To a lesser extent, other attributes may determine the newsworthiness of a suicide, e.g., suicides occurring on public property or those having unusual circumstances or characteristics.

The principle of newsworthiness is best operationalized through these editors' responses to a question of what coverage they would likely give to each of eight hypothetical suicides. As noted in Table 1, the prominence of the suicide victim (national entertainment or political figure) determines both that the death would be reported and the likelihood of front page coverage. Other youth suicides occurring either on public property (school grounds, jail) or sug-

Editor's Judgment About Whether His Paper Would Cover a Given Hypothetical Suicide Event

N = 15 Editors

Event	Would Cover	Would Place on Front Page/Other	No Coverage
National political celebrity	15	15/0	0
National entertainment celebrity	15	13/2	0
Eight year old uses father's gun on school grounds	14	9/5	1
Third adolescent suicide in last 2 weeks	13	9/4	2
Eighteen year old in city/county jail	15	6/9	0
Eight year old, at home leaves note	13	2/11	2
Valedictorian of High School class	10	2/8	5
Seventeen year old son of prominent local family	10	0/10	5

Table 1.

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*As selected from the 1986 Working Press of the Nation, these were: (1) Metropolitan: The New York Times, The Atlanta Journal-Constitution, The Houston Post, The Chicago Tribune, and The Los Angeles Times; (2) Small City: The Lansing (MI) State Journal, The Tucson (AZ) Daily Star, The Register-Guard (Eugene, OR), The Portland (ME) Press-Citizen, and The Mobile (AL) Press; and (3) Rural: The Kalispell (MT) Daily Interlake, The Morristown (TN) Citizen-Tribune, The Lebanon (PA) Daily News, The Iowa City (IA) Press-Citizen, and The Bartlesville (OK) Examiner-Enterprise.

gesting evidence of a clustering effect appear more likely to be given significant coverage than those of a more personal/private nature.

However, communities define newsworthiness differentially. Whereas the suicide of an 18 year old in a city/county jail would be reported by all papers surveyed, all five of the rural papers likely would give such a story front page coverage (vs. only two of the other ten papers). Similarly, the suicidal death of an eight year old by his father's gun on public school grounds would be front page news for all five of the small circulation dailies, but only four of the ten larger papers.

It is important to note that print editors pride themselves on their ability to be tuned into the pulse of their own community. They believe that their own judgments about newsworthiness should transcend any imposed code of ethics about what should or should not be printed. However, many editors do use some guidelines in printing accounts of suicides. For example, while eight of these 15 papers routinely report cause of death in obituaries, one-half of these **exclude** the report of cause of death in the case of a child or at the request of a family. And when asked if a prominent family could pressure successfully to have the paper not cover the suicidal death of a family member, two editors believed this was possible at a higher level of authority (e.g., the publisher). Neither of these editors was among those who exclude cause of death from obituaries when requested by families.

Last, editors were asked how they might respond if the scientific community could prove that media coverage caused imitative suicides. At all three levels of circulation, responses were about equally divided between those affirming the freedom of the press ("no effect") and those who would respond with "greater caution," "take a low-key approach," and/or carefully "discuss and review existing policies on a case-by-case basis." Size of circulation does not appear to affect the impact of and response to this problem.

Almost all media exercise greater or lesser degrees of self-censorship over suicide-related issues (27). Even at the largest and most influential of dailies, differential decisions reflecting the type and amount of coverage are readily apparent. For example, in 1985, *The Washington Post* was almost twice as likely (73% vs. 46%) to place a suicide-related article in Section 1 and almost three times as likely (29% vs. 10%) to use an accompanying photograph as were either *The New York Times* or *The Los Angeles Times* (see Table 2). There is no discernible explanation for these differences. Assuming that it could be shown that media coverage of suicides led to imitative suicides, what would determine how news decisionmakers would respond? In part, the response would depend on the individual consciences of media decisionmakers, and the balance between their sensitivities to individual rights and the public's right to know. In addition, embedded in these individual decisions is a

Comparative Newspaper Coverage (1985) of Suicide Stories

Paper	Total Stories	Front Page N	Front Page %	Other 1st Sect N	Other 1st Sect %	Other Sect. Page 1 N	Other Sect. Page 1 %	Used Accompanying Pictures N	Used Accompanying Pictures %
NY TIMES	67	1	1.5	29	43	2	3	6	9
WASH POST	56	8	14	33	59	7	12.5	16	29
LA TIMES	25	3	12	9	36	6	24	3	12

Table 2.

concern about how the media can increase their readership or improve their ratings. Consequently, all decisions, in truth, are governed by a certain and unavoidable level of exploitation of that which promotes audience attention. If the stimulus for that attention has sufficient human interest--and suicide as an often tragic statement of the human condition does--then limited, rational control over the content, amount, and type of its media presentation will be difficult to accomplish at best.

That is not meant to imply that the media use total license or are insensitive to their impact. Freedom of the press is neither without restriction (e.g., the ban on cigarette advertising) nor without conscience (e.g., it is unlikely that the media would provide step by step instruction on how to take "crack"). Nor, perhaps, might the same decisions be made with regard to news vs. dramatic presentations of suicide stories. As stated by the Vice President for News and Public Affairs Programming of the Public Broadcasting System (28), although he would not hesitate to broadcast news reports, the decision to broadcast "Choosing Suicide," (7) a nonfictional presentation about a woman's decision to commit suicide, in 1980 was "the toughest decision I have had to make."

In order, then, to have an impact on these decisions, research must be methodologically sound, evidence reasonably consistent findings, and be widely disseminated to media decisionmakers to increase their awareness and potentially alter their decisions. The resultant behavior change, if it occurs at all, will reflect a complex interaction among many competing criteria and is more likely to occur if the decisionmakers feel they are part of the decision process.

Recommended Strategy I:

The role of the media in modeling suicidal behavior leading to imitative events needs to be better defined. Incentives for collaborative research between the nonprofit sector and broadcast media (offices of social research) need to be developed. Government-sponsored requests for proposals, RFPs, should solicit joint submissions that address a range of significant questions, including what needs to be known, the magnitude of the effect, and how the effect can be modified.

Recommended Strategy II:

Increase the awareness among media decisionmakers of the research-based data and develop voluntary guidelines for the coverage of suicide in news, feature, and dramatic presentations. This could be accomplished through presentation and discussion at appropriate forums (meetings, conferences) and through government-sponsored programs.

Steps toward Implementation

Any strategies or recommendations to the media must be both pragmatic and feasible and appear to rest on building a cooperative rather than adversarial relationship between the social science and media communities. History suggests that this may not be accomplished easily.

In 1966, the Russell Sage Foundation and the Columbia University Graduate School of Journalism cosponsored a three-day conference, with 60 invited journalists and scholars, on the behavioral sciences and the mass media. The aim of this meeting was to explore "ways to achieve closer cooperation and interplay" (29). Among the stated concerns for this meeting was that the media were increasingly "anxious...to receive advice on utilizing behavioral science resources in dealing with issues in the news." However, issues of ethics, standards, and the influence of the mass media on human behavior were not addressed as significant factors for discussion at this meeting.

With the widely publicized conclusion of government-sponsored reviews of the research on the effects of televised stimuli on the aggressive behavior of youth who watch (30), has come an increasingly adversarial relationship between the media and research communities. The media argued that the evidence was weak, derived from methodologically unsound studies, and was, at best, correlational. They felt attacked unjustifiably and marshalled their in-house offices of social research to counterattack (31).

An attempt to again open communication between the scientific and media communities occurred in September 1984 with a three-day workshop on the role of the media in the prevention of violence, a workshop sponsored by the National Institute of Mental Health and the Association for Media Psychology (32). The specific aims of this meeting were to explore: (a) alternatives to censorship, (b) prosocial uses of television, and (c) ways to develop an on-going collaboration (a "cooperative bridge"). As a significant outcome of these discussions, participants developed 32 action plans to meet these goals. To date, however, there has been no follow-through; no leadership from the government, the media, or the behavioral sciences; and no budgetary allocation to put into effect even one of these recommendations.

Therefore, it is **imperative** that the recommendations of the Secretary's Task Force on Youth Suicide incorporate long term planning and follow-through.

Last, attention needs to be directed toward increasing the use of the media proactively and interactively--as a mechanism for effecting desired changes. The following strategy, the background for which has been delineated earlier (7), also assumes that coordinated long term leadership by the government, the private sector (e.g., the Advertising Council), and the media can be accomplished.

Recommended Strategy III:

An on-going public information campaign using models admired by and attractive to youth needs to be established. Given current thinking, however, it perhaps is best that this campaign not focus on suicide, per se, but, rather on a variety of social skills and behaviors that serve to decrease the risk of suicidal behaviors. Significant attention must be given to extending the reach, duration, frequency, and timing of such public service messages in order to maximize their effectiveness (7). In addition, these messages should be supplemented and complemented by print material available through school and community outlets. These messages should focus at a minimum, on three areas:

1. Providing information on available services for potentially suicidal youth and on increasing help-seeking behavior,
2. Modeling nonsuicidal alternatives to situations of conflict and stress, and
3. Educating the public in techniques for safeguarding the home environment with particular concern for increasing the security of firearms in the home, and decreasing the ready availability of unnecessary medications and other instruments of potentially lethal harm.

CONCLUSION

To date, the media have been on the defensive in response to being seen as part of the problem. The possibility of effecting significant change in the role of the media in large measure depends on establishing a cooperative bridge with the media and encouraging a mind set directed toward becoming part of the solution. Any strategy designed to accomplish this end must recognize the autonomy of the media and attend, first and foremost, to the process of collaborative goal-setting.

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APPENDIX

Using Bandura's social learning theory, Gist (24) has succinctly outlined a framework of use to understand the role of modeling and observational learning in the generation of a complex human behavior such as suicide. This framework has four essential components:

1. Attention to Model: The model must be perceived, noted, and observed.
2. Retention/Reproduction: Predisposing conditions enhance the imaginal and verbal encoding of the model. Opportunities for cognitive rehearsal of the behavior to be modeled enhance both the encoding and the probability of the behavior.
3. Reproductive Capacity: Translation from observed behavior to idea into action requires the ability to actually perform the behavior (available means, knowledge/skill necessary to implement successfully, etc.).
4. Motivation/Reinforcement: Expectations regarding consequences (perceived outcomes/effects) help form both the intention to perform the behavior and reinforce its probability of occurrence.

INTERVENTIONS THROUGH BUSINESS AND PHILANTHROPY TO PREVENT YOUTH SUICIDE

Wendy Everett Watson, Ph.D., Program Director, The Henry J. Kaiser Family Foundation, Menlo Park, California

Bobbie Wunsch, Health Care Consultant, The Henry J. Kaiser Family Foundation, Menlo Park, California

SUMMARY

Intervention to prevent youth suicide has not been a priority for foundations or businesses up to the present.

Foundation funding for both youth suicide research and prevention programs has been minimal. Examinations of the projects and programs that have been funded reveal that the personal experience of individuals, and not foundation grant guidelines, are most likely to have an impact on foundation funding.

At the worksite, businesses have provided little in the way of available support services. In some cases, employee insurance benefits cover counseling for suicide attempters and their families. Employee assistance programs also may provide assessment, brief counseling, and referrals for employees. Youth suicide has not been identified as a target for intervention at the workplace.

Coordinated community education and school-based research programs might provide a unique avenue for foundations, businesses, and service providers to work closely together. Where such efforts have been attempted, results have been positive. Unfortunately, these efforts have not been prolific.

Foundations and businesses do have an opportunity to become more involved in the prevention of youth suicide through a variety of strategies that are discussed in this paper. For the best effects, activities should be an extension of procedures already established for dealing with other youth-related problems.

INTRODUCTION

"Suicide is a major preventable cause of death. Prevention is facilitated by identification of populations at increased risk. It further requires the ability to estimate accurately the degree of risk in a given person at a given time and to intervene effectively" (1). In preparing the following comments and recommendations, the authors interviewed a variety of business leaders, foundation officials and suicide prevention center staff, and conducted a review of all relevant literature.

BACKGROUND

To date, foundations and businesses have been minimally involved in preventing youth suicide. Foundations and businesses seeking to provide funding and support for youth suicide prevention have the inherently difficult problem of identifying high risk factors leading to youth suicide. Because the potential target population is so large, it is also difficult to identify and evaluate cost-effective and efficient intervention programs. The funding and support that has been provided is due primarily to the personal involvement or interest on the part of a foundation official or a board member or a business executive. In some limited cases, funding is also available when a foundation already has made a commitment to adolescent issues, such as physical and mental health, substance abuse, teenage pregnancy, and employment and training.

Research

Research into the causes of youth suicide is divided between the somewhat overlapping populations of suicides and suicide attempters. Studies of suicides report that proven techniques have yet to be developed for reducing suicide rates. Motto, Heilbron, and Juster, experts in the field, state in the "Development of a Clinical Instrument to Estimate Suicide Risk": "...Whether improved accuracy and communication of degrees of risk will reduce the occurrence of unnecessary and preventable suicides is still to be demonstrated" (2). It is perhaps for this reason that the lion's share of foundation support has been for research rather than intervention.

Only in the area of attempted suicide do statistics offer some encouragement. One report says, "In a very well known French study focused on adolescents (Davidson, Choquet and Facy, 1976) the global incidence of repeats is 30 percent" (3). And the Samaritans in their pamphlet, "Suicide Prevention: A Guide for Students," comment that "four out of five persons who succeed in killing themselves have made at least one previous attempt" (4). Thus, work with suicide attempters has attracted funding sources through community-based prevention programs because there seems to be some hope of achieving and demonstrating success. As Trautman comments in "Treatment of Child and Adolescent Suicide Attempters," "...well designed treatment studies are almost non-existent in the literature, yet there is evidence that treatment can favorably affect social adjustment, mental state and suicide reattempt rates. There is a great need for additional research in the treatment of the young suicide attempter" (5).

Community-Based Programs

The major service providers working to prevent youth suicide are community-based suicide prevention centers, located in communities throughout the country. Much has been done by individual suicide prevention centers, particularly those staffed by innovative people.

A good example is a foundation and business-funded program involving the Samaritans in Providence, Rhode Island, a local chapter of Samaritans USA, that focuses on efforts to prevent suicide and educate the public about issues relating to suicide. The Samaritans' program is exciting not only because of its logical progression from teachers' manual to General Assembly (State Legislature of Rhode Island), but also because of the way in which a wide variety of interdisciplinary health, education, and social service entities are linked to deliver results. The program was enthusiastically funded by the Rhode Island Foundation (a private foundation in Providence, Rhode Island, funding a variety of community issues) for several significant reasons:

- the use of a multidisciplinary approach to youth suicide prevention in the context of other adolescent problems;
- the implementation of a successful fund-raising drive to enlist broad community support for the program;
- a program evaluation component that identified and assessed the incidence of youth suicide in the target population; and
- the foundation's confidence in the strength of the administration of the

program.

The Samaritans played a key leadership role in a prevention program that:

- Secured a venture grant from United Way and Ocean States Charities Fund to pay for research and the development of a manual on suicide prevention for high schools.
- Obtained a National Conference of State Legislatures Grant to implement and assess a pilot Suicide Awareness, Identification and Prevention Program Model for State and National Utilization that trained teachers and students in high schools to deal with the issue of youth suicide.
- Assessed a methodology to determine suicide awareness, identification and prevention for the Rhode Island Task Force on Teenage Suicide Prevention and made recommendations to the Rhode Island State Legislature on the subject.
- Coordinated and secured funding from the Rhode Island Department of Health to implement the program with teachers.
- Worked with the Department of Education to incorporate suicide prevention into their mandatory health curriculum.
- In conjunction with the Rhode Island Task Force on Teenage Suicide Prevention, submitted a bill to the General Assembly for a Suicide Awareness Program for Public School Students, Grades 9-12 (6).

In addition to their multidisciplinary efforts with governmental and educational groups, the Samaritans also have been successful in developing a diverse private funding base for their programs. In their 1985 annual report (7), the Samaritans list their contributors as:

- 11 small local foundations contributing $23,000;
- 24 corporations contributing $7,100;
- 4 grants from public funds totaling $21,400;
- Individual contributions totaling $30,200;
- 61 contributions from religious organizations totaling $4,300; and
- 13 service clubs contributing $3,000.

This diversified funding base suggests that a variety of community resources can be involved to support youth suicide prevention programs. It would seem further to suggest the role of the suicide prevention centers as a key organizing element in cooperative programs between schools, government health and welfare agencies, as well as funding sources.

Similar emphasis on wide community involvement is indicated in a program initiated by the Suicide Prevention and Crisis Center of San Mateo County directed by Charlotte P. Ross. The staff of the crisis center met with representatives of 6 high school districts (involving 22 high schools and 4 continuation schools), 3 community college campuses, and 4 mental health centers. They participated in such activities as planning a teacher training program, reviewing materials, and cosponsoring training workshops within their institutions. "In addition, discussion groups were conducted, several television and radio specials on adolescent suicide were arranged, numerous newspaper articles appeared in the local press, and an educational film, *Suicide at Seventeen,* was developed and distributed" (8). While that effort was funded by the Legislature of the State of California, the approach clearly suggests wide possibilities for involving a variety of elements of the community, including foundations and businesses.

CURRENT STATUS

Foundation Activities

Private and corporate foundations to date have provided the largest percentage of foundation funding from the private sector in the area of suicide and youth suicide. Total funding reported to the *Foundation Grants Index* in 1982, 1983, and 1984 from 12 private and corporate foundations was $807,632 representing $622,073 for research in youth suicide (77%), $11,809 for suicide prevention with the elderly (1.5%), and $173,750 for crisis intervention programs including services to youth (21.5%).

Research on the impact of private and corporate foundation funding of suicide prevention, either through research or intervention programs, reveals the following data:

1. Suicide was not listed as a subject category until the 14th edition of the *Foundation Grants Index*, A Cumulative Listing of Foundation Grants, compiled and published by the Foundation Center in New York in 1985 (9). Before that time, suicide was indexed with "mental health" or "medical research" categories. The Foundation Center reports the addition of the category of "suicide" in response to growing interest on the subject from users of the Foundation Center and its publications. Although suicide is now listed, youth suicide is currently not listed as a separate category in the 14th Edition of *The Foundation Grants Index*.

2. During 1982, 1983, and 1984, 12 foundations reported funding suicide research and/or intervention programs to *The Foundation Grants Index*. Those foundations were:

Atlantic Richfield Foundation, Los Angeles, California

Boston Foundation, Boston, Massachusetts

Dayton Hudson Foundation, Minneapolis, Minnesota

William T. Grant Foundation, New York, New York

Herman Goldman Foundation, New York, New York

Hartford Foundation, Hartford, Connecticut

Koret Foundation, San Francisco, California

Meadows Foundation, Dallas, Texas

Monsanto Fund, St. Louis, Missouri

New York Foundation, New York, New York

Retirement Research Fund, Chicago, Illinois

Rhode Island Foundation, Providence, Rhode Island.

3. The 12 foundations represent approximately .3 percent of the 4,402 foundations reporting to the Foundation Grants Index; those 4,402 foundations reported giving $4.1 billion annually, of which suicide funding accounts for approximately .02 percent.

4. The foundations listed previously reported providing a total of $807,632 to such programs during 1982, 1983 and 1984. For comparative purposes only, foundation giving in the area of "mental health" in 1984 was represented by 488 grants given by 172 foundations for a total of $26,192,792, and "children and youth" in 1984 were given 663 grants by 230 foundations for a total of $37,335,681.

5. Of the 12 foundations that reported funding in the area of suicide, 3 are corporate foundations. All three (Atlantic Richfield Foundation, Dayton Hudson Foundation, and Monsanto Fund) reported that funding for suicide prevention was made in all cases at the specific request of local executives within the corporations. In discussions with representatives of the 12 foundations about their funding in the area of suicide or youth suicide, the following points emerged:

- At the Monsanto Fund, Dayton Hudson Foundation, and the Atlantic Richfield Foundation, a percentage of funds is allocated to local operating companies and may be designated by local executives to support specific community activities. In all three cases, local executives with personal knowledge of a suicide or suicide attempt among family members or friends influenced the funding decisions. At the Dayton Hudson Foundation and at the Atlantic Richfield Foundation, suicide prevention services are not traditionally an area of grantmaking for the foundations. Dayton Hudson currently focuses on the abuse and neglect of children and women; the Atlantic Richfield Foundation focuses its funds to direct health and medical services aimed at wellness and cost containment issues. An executive at Atlantic Richfield Foundation stated that the foundation would not fund suicide or youth suicide programs, given current guidelines, without the influence of local executives on funding decisions. Suicide prevention programs are identified with school or community based educational programs.

- The Koret Foundation, San Francisco, California, one of the 50 largest foundations in the country, has changed its funding guidelines since it awarded the Marin Suicide Prevention Center $21,300 in two grants in 1982 and 1983. The emphasis of the foundation is now in the area of youth employment and education. A foundation official stated that under current guidelines, the foundation would no longer fund suicide prevention programs.
- The William T. Grant Foundation and the Herman Goldman Foundation, both of New York City, provided funds for suicide research. The Herman Goldman Foundation staff reported that the research funding was provided because of a personal interest on the part of a Board member and funding will not be continued. The William T. Grant Foundation provided $516,073 in research funding, the largest total amount of grants provided to suicide prevention in 1982, 1983, and 1984. The William T. Grant Foundation has continued to fund youth suicide research because the foundation's program focus is helping school-aged children cope with stress.
- The Rhode Island Foundation, the Hartford Foundation, the New York Foundation, the Koret Foundation, the Meadows Foundation, the Atlantic Richfield Foundation, the Monsanto Fund, the Dayton Hudson Foundation and the Boston Foundation provided a total of $173,750 in funding during 1982, 1983, and 1984 for suicide crisis intervention programs. This support represented allocations for school-based youth education programs, capital equipment, and general support.
- Our research identified the only other foundation with a keen and aggressive interest in youth suicide: the Boston Foundation, Boston, Massachusetts, that represents and directs the funds of the George Harrington Trust with its major focus on adolescent depression. The Trust is currently preparing a solicitation aimed at a major school-based program in adolescent depression and youth suicide. Currently, the foundation, in conjunction with Samaritan Hospital in Boston, is funding a $60,000 pilot series on youth suicide prevention on public television station WGBH. The Boston Foundation is currently focusing its efforts on health promotion for young people, including the prevention of youth violence and accidents.

In summary, the 12 foundations providing support to suicide prevention activities in 1982, 1983, and 1984 could be categorized as:

- 2 foundations funded applied research activities, one will continue this support and another will not.
- 9 foundations funded community-based intervention centers--3 due to local corporate executive designation; 1 as a primary focus area. 3 other foundations will not continue funding in the area of suicide prevention; 2 others funded as a result of board member's personal involvement with the issue.
- 1 foundation funded suicide prevention for elderly Hispanics only.
- 1 foundation placed a priority on the relationship between youth suicide, youth violence, and accidents.

Business Activities

Within the business community, corporations traditionally have contributed in three ways to the prevention of youth suicide.

1. Corporate foundation support (as discussed above in the previous section on Foundation Activities);

2. Employee health insurance benefit programs; and

3. Employee assistance programs.

Currently, little is done specifically to identify potential youth suicide issues with employer groups or employees. Most employee health education programs focus on stress on the job, alcoholism, drug abuse, and smoking cessation.

The following comments will refer specifically to employee health insurance benefit programs and employee assistance programs.

Employees can obtain assistance at the worksite in dealing with suicide in two ways. One is psychological or psychiatric counseling provided through the employee health insurance benefit program. In a majority of health plans, at least partial coverage exists for such counseling. In such a case, an employee or the employee's covered dependents could seek assistance outside of the worksite for suicide prevention or grief counseling. "At least 50 percent of the money (from health insurance for drug and alcohol patients) goes to employee's families, increasingly to children" (10). These services would be provided on a confidential basis by the practitioner of the employee's choice, as long as the benefits covered that practitioner. The business would be involved through its benefits division in the approval and payment of fees, appropriate to the specific coverage.

Where an employee assistance program exists (there are over 450 of these programs located at major companies throughout the country), consultation on employee behavior, health, and finances is provided by health professionals either at the workplace or at an external facility under contract for such purposes. Employees can self-refer themselves to such counseling services or could be referred by supervisors because of change of behavior, depression, or lack of productivity on the job. Participation in the programs is strictly voluntary. Youth suicide is an area that the health professionals could be capable of discussing with the employee. However, the intervention typically focuses on the employee and not on the employee's dependents. The counselor would identify the problem, and its severity, and often set up brief therapy of usually no more than six sessions, in addition to making referrals for further treatment, if necessary. With the growth of corporate drug testing and treatment programs, activities and awareness in this area may begin to be utilized more effectively.

Business and insurance companies (many of the corporations listed as sponsors by the Samaritans are insurance companies) would seem to have a mutual interest in developing working models of intervention for suicide prevention in the workplace, perhaps with models jointly sponsored by corporate foundations. The benefits of intervention both to the employer and the insurance company could result in increased worksite productivity, lower absenteeism, and reduced health costs. At this time though, fear, stigma, and cost seem to act as barriers to further development in this area.

RECOMMENDATIONS

Foundations and businesses should be encouraged to consider support for the prevention of youth suicide. We suggest the following strategies:

For Foundations

1. Educate foundation officials to the alarming and increasing problem of youth suicide. Foundation program officials could be encouraged to understand more fully the problem of youth suicide and its place in adolescent problems. Perhaps the Council on Foundations could host informational ses-

sions on the topic as a direct result of the U.S. Department of Health and Human Services Secretary's Task Force on Youth Suicide.

2. Encourage private and corporate foundation contributions that are directed to other youth-related problems (i.e., adolescent depression, drug abuse, alcohol abuse, teen pregnancy) to include youth suicide as a related problem on which they can focus attention through the training of staff and volunteers and conducting community outreach activities. In this way, youth suicide would not be considered an isolated problem but rather would be integrated into an approach that teaches youth how to cope with a variety of physical and psychological issues. It seems particularly important to seek young people out where they are--particularly in the school setting--to discuss such issues as a part of school-based educational and counseling programs. Curriculum development with teachers and skill development for counseling staff could be a priority for funding by foundations already involved in school-based education.

3. Encourage additional research in the area of youth suicide with grants to research institutions, particularly those tied to direct service programs. Foundations that provide funding for research could emphasize the need for a coordinated effort between direct intervention services and academic research and could initiate the support of demonstration programs tied closely to effective program evaluation.

4. Encourage suicide prevention centers to initiate and coordinate community-wide educational programs, especially in the schools. Centers should seek opportunities to develop integrated approaches with other youth-servicing agencies, schools and government health and welfare agencies; efforts which would appeal to foundation involvement.

For Businesses

5. Encourage employee assistance program professionals to develop educational programs to help employees and family members become more aware of the problem of youth suicide and to develop clear and effective third party referrals.

6. Include the topic of youth suicide in programs on adolescent problems geared to the younger employee in companies where young people tend to work (i.e., fast food chains, retail stores). Invite suicide prevention counselors and outreach workers to come to the worksite for educational programs.

7. Develop awareness programs for employees and develop educational information for company newsletters to educate employees and their families about the warning signs and potential risk factors of youth suicide. Since youth suicide is generally an issue that most individuals avoid, much can be done to raise employees' awareness of the problem. Include youth suicide in a listing of services provided or referred by the employee assistance program.

8. At the worksite, encourage businesses to provide and continue to make available employee assistance counseling programs and insurance/ health benefits to cover psychological counseling and support programs for employees and their families where youth suicide has occurred or where other risk factors related to youth suicide have been identified. Such services can be targeted specifically to those individual cases where suicide attempters have been identified or where adolescent depression is apparent. Such services must be provided on a confidential basis. Finances or job security must not be barriers to service. Perhaps business and foundations could work together to fund research on what issues limit utilization of such services.

CONCLUSIONS

Youth suicide prevention currently is not an area of emphasis for foundation funding or business involvement.

Although 12 foundations nationwide have

reported funding youth suicide prevention and research, only 2 foundations can be said to have a program emphasis in this area. There is opportunity for foundations to direct funds both to (1) applied research in more specifically identifying risk factors in youth suicide and in evaluating the effectiveness of services provided, and (2) continued funding for community-based prevention programs.

Little, at the present, is being done by businesses. Both employee assistance programs and employee insurance benefit programs can raise awareness about youth suicide among employees and their families.

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APPENDIX

1. **Interviews conducted with:**

a. Community-based Prevention Centers:

(1) Robin Allen
Marin Suicide Prevention Center
San Rafael, California

(2) Lois Guthrie
Suicide Prevention and Crisis Center of San Mateo County
San Mateo, California

(3) Carolyn Drew
The Samaritans
Providence, Rhode Island

b. Businesses and Related Professional Organizations:

(1) Willis Goldbeck
Washington Business Group on Health
Washington, D.C.

(2) Thomas Delaney
Association of Labor-Management and Consultants on Alcoholism, Inc.
Arlington, Virginia

(3) Clarence Pearson
Metropolitan Life Insurance Company
New York, New York

(4) Ed Markhesini
Employee Assistance Program
Metropolitan Life Insurance Company
New York, New York

(5) Ted Lucus
New York Business Group on Health
New York, New York

(6) Clem Papazian
Employee Assistance Program
Levi-Strauss Corporation
San Francisco, California

(7) Paulette Wrede
Benefits Coordinator
Levi-Strauss Corporation
San Francisco, California

(8) Dr. William G. Durkin
Employee Assistance Program
Atlantic Richfield Corporation
Los Angeles, California

(9) Dr. Paul Roman
Tulane University
New Orleans, Louisiana

(10) Gary Atkins
Employee Assistance Program
Lockheed Missile and Space Corp.
Sunnyvale, California

c. Private and Corporate Foundations:

(1) Thomas Berg and Barbara Thatcher
Dayton-Hudson Foundation
Minneapolis, Minnesota

(2) Douglas Jansen
Rhode Island Foundation
Providence, Rhode Island

(3) Debbie Bauman
Herman Goldman Foundation
New York, New York

(4) Nancy Nelson
Meadows Foundation
Dallas, Texas

(5) Lois Johnson
Monsanto Fund
St. Louis, Missouri

(6) Tony Martinez
Atlantic Richfield Foundation
Los Angeles, California

(7) Jo Ann Vonte
Koret Foundation
San Francisco, California

(8) John Ramsey
Boston Foundation
Boston, Massachusetts

(9) Linda Pickett
William T. Grant Foundation
New York, New York

2. **Annual Reports:**

Atlantic Richfield Foundation
Los Angeles, California

Boston Foundation
Boston, Massachusetts

Dayton Hudson Foundation
Minneapolis, Minnesota

William T. Grant Foundation
New York, New York

Herman Goldman Foundation
New York, New York

Hartford Foundation
Hartford, Connecticut

Koret Foundation
San Francisco, California

Meadows Foundation
Dallas, Texas

Monsanto Fund
St. Louis, Missouri

New York Foundation
New York, New York

Retirement Research Fund
Chicago, Illinois

Rhode Island Foundation
Providence, Rhode Island

3. **The Foundation Grants Index**

13th edition and 14th edition, A Cumulative Listing of Foundation Grants. Compiled by The Foundation Center. E. Garonzik and P. Read, editors. 1985

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